



Commissioner Marilyn Brown • Commissioner Paula Brooks • Commissioner John O'Grady
President

Economic Development & Planning Department
James Schimmer, Director

Technical Review Committee Agenda

Franklin County Engineer's Office
970 Dublin Road
Columbus, OH 43215

April 21, 2015
1:30 p.m.

1. New Business – No new cases
2. Old Business

A. Planning Commission

iv. JACK-15-02 – Anthony Hray – *Tabled until May 13, 2015 Planning Commission meeting*

Applicant/Owner:	Deborah J. Guzzo
Township:	Jackson Township
Site:	1700 Dyer (PID #160-000860 and 160-000861)
Acreage:	12-acres
Zoning:	Suburban Residential (SR) District
Utilities:	Public water and on-site wastewater
Request:	Requesting to rezone from the Suburban Residential District to the Exceptional Use District.

3. Adjournment of Meeting to May 26, 2015.



Economic Development & Planning Department
James Schimmer, Director

Request for

Township Zoning Recommendation

Franklin County Planning Commission

Township	
<input type="checkbox"/> Blendon	<input type="checkbox"/> Plain
<input checked="" type="checkbox"/> Jackson	<input type="checkbox"/> Prairie
<input type="checkbox"/> Jefferson	<input type="checkbox"/> Washington
<input type="checkbox"/> Perry	

Case Number
JACK-15-02

Amendment Type	
<input checked="" type="checkbox"/> Map amendment	
<input type="checkbox"/> Text amendment	
<input type="checkbox"/> Land use plan amendment	

Meeting Dates	
Review Body	Date
Tech Review	April 21, 2015
Planning Commission	May 13, 2015

Amendment information		
Amendment type	Information required	
Map amendment:	List all parcel IDs to be amended 160-000860 160-000861	Zoning district Current: Semi-Rural Residential Proposed: Exceptional Use
Text amendment		
Plan amendment	Document type: <input type="checkbox"/> New plan <input type="checkbox"/> Existing Plan Plan name:	

Township Zoning Inspector Contact Information	
Name Mike Lilly	
Address 3756 Hoover Road Grove City, OH 43123	
Phone # 614-875-0100	Fax # 614-871-6456
Email lillym@jacksontwp.org	

EXCEPTIONAL USE DISTRICT
JACKSON TOWNSHIP
1700 DYER ROAD
JACKSON TOWNSHIP, FRANKLIN COUNTY, OHIO
KICKMASTER FOOTGOLF
NO. _____

BACKGROUND:

The subject site is located on the north side of Dyer Road east of Brown Road. The site is surrounded by single-family residential land uses. The site incorporates approximately 12± acres and has one owner. The site has an existing 2,161 square foot residential building and a detached garage; both of which were constructed in 1947. The site is zoned Suburban Residential District. The applicant is requesting to rezone the property to the Exceptional Use District to permit recreational and amusement activities both indoors and outdoors on the site. A new 12,800 square foot building will be erected on the property to provide for indoor activities.

PERMITTED USES:

The following shall be permitted:

- Single family residence
- Exterior Areas

Year-round foot golf, weather permitting; Friday night glow-in-the-dark foot golf with balls that glow, t-markers that glow, reflective vests, holes that have LED beams of light shining up from the cup; Pro-Am tournaments, corporate sponsored outings/events, charitable functions/outings. Food trucks shall be permitted on the parking lot as a temporary activity. The outdoor activities will operate seven (7) days a week starting at 6 a.m. and on certain nights of the week will continue until midnight (on Friday and Saturdays) and 8 p.m. on the other nights.

- Interior Areas – Within the 12,800 sq. ft. building

Activities include: workout facilities or sports training, including but not limited to, soccer and baseball training and practice, a clubhouse with retail space indoor/outdoor seating with televisions and vending machines. The indoor activities will operate seven days a week starting at 6 a.m. and on certain nights of the week will continue until midnight.

DEVELOPMENT STANDARDS:

Unless otherwise indicated in the submitted drawing or in the written text, the applicable standards for the site shall be those standards contained in all applicable Sections of the Jackson Township Zoning Code.

LIGHTING:

- a. All lighting on the subject property shall be cut-off type fixtures (down lighting) and limited to the building, golf course area, patio and parking areas unless located for landscaping and security purposes.
- b. All types of parking, building and other exterior lighting to be on poles shall be from the same "family" from the same manufacturer's type and style.
- c. All lighting poles will be either of wood or bronzed colored metal construction.
- d. Parking lot lighting shall not exceed twelve (12) feet in height.
- e. The exterior lighting for the site shall minimize off-site glare and reflection by utilizing screening, direction of lighting, height of lighting, wattage and type of lighting.

SIGNAGE AND GRAPHICS:

- a. One freestanding graphic shall be allowed along the Dyer Road frontage. The total size of the sign shall not exceed fifty (50) square feet and shall not be any higher than ten (10) feet. The sign design is included in the Exceptional Use application.
- b. Black, dark walnut, dark charcoal, dark rust, dark green or dark bronze in color sign frame shall be utilized for the sign with cream colored lettering and border. The signage may be internally or external illuminated. The sign will have a stone base.
- c. Directional signs for ingress and egress shall be permitted at the curbcuts on Dyer Road to direct traffic in and out of the site.
- d. No off-premise graphic shall be permitted on site nor any illumination which flashes, travels, animates or intermittently illuminates shall be allowed.
- e. Signage will be permitted throughout the course and placards will be located around the outer perimeters of the course area.

ENVIRONMENTAL TREATMENT:

- a. The parking lot shall be landscaped along the eastern and southern edge with a variety of shrubs and other landscaping materials to produce a height of three (3) feet with a 60% opacity within two (2) years.
- b. An earthen berm and an eight (8) foot tall white board on board fence shall be erected around the rear play area as shown on the site plan.
- c. There shall be only two (2) curbcuts allowed for along Dyer Road, one for the house and one to serve the proposed parking lot and that curb cut shall have a maximum width of thirty-five (35) feet. The parking area and access lanes will be paved and maintained in order to prevent any dust problems.
- e. The screening and landscaping plan for the development of the site shall conform to the submitted drawings and such screening shall provide a buffer to the areas to the west, south and east. All screen plantings shall be maintained permanently and any plant which does not survive shall be replaced within one year with material meeting the specifications of the original planting. Maintenance of the screening materials shall be the responsibility of the owner of the property and failure to replace and maintain the screening materials shall be a violation of the Jackson Township Zoning Code.

SITE PLAN:

- a. The property shall be used in accordance with the submitted site plan. The attached site plan illustrates the area where the building and parking areas will be located. This site plan may be slightly adjusted to reflect engineering, topographical or other site data developed at the time final development and engineering plans are completed. Any slight adjustment to the site plan shall be reviewed and approved by the Zoning Officer or his designee, upon submission of the appropriate data regarding the proposed adjustment. The general layout and site concept shall, however, conform to the site plan.
- b. Parking requirements shall conform to those found in Section 531 of the Jackson Township Zoning Code except that parking spaces may be 9' x 18' as a divergence to the Zoning Code Standard.

BUILDING ELEVATIONS:

- a. The new building shall conform to the submitted elevations.

STORMWATER DRAINAGE:

- a. Drainage and run-off from the proposed development shall not cause property damage to off-site areas. All drainage improvements shall be designed in conformance with the requirements for the Franklin County Stormwater Drainage Manual and the Jackson Township Zoning Resolution. The new building will be guttered and the down spouts will tie into a drainage system that routes the surface drainage into the catch basins located on the site. If necessary, additional catch basin will be located on the parking lot and sized to permit on-site detention in the parking areas and then provide for a gradual release of surface water into the existing catch basin. EP Ferris and Associates confirms the ability of the detention pond to handle proposed stormwater run-offs as it is the consulting engineer for the project.
- b. The building will also conform to the requirements of the Franklin County Stormwater Drainage Manual and the Jackson Township Zoning Resolution and will utilize the detention basin used for stormwater drainage. The stormwater detention plan will accompany the site plan for detailing the methods to be used to handle stormwater drainage off the site.

SEWAGE DISPOSAL AND WATER SUPPLY:

City of Columbus centralized water is available to serve the site and new onsite septic system is proposed to serve the various utilities that are permitted on the property.

POLLUTION:

- a. Smoke: No smoke shall be emitted from any structure in the Exceptional Use District.
- b. Noise: The noise level shall be no greater than sixty (60) decibels at the lot line.
- c. Odor: No odorous gases or other odorous matter in any quantities as to be offensive at any point on or beyond the Exceptional Use District boundary.

ARCHITECTURAL DESIGN:

- a. No outside storage shall be permitted on the lot. No rubbish or debris of any kind shall be placed or permitted to accumulate on any portion of the lot.
- b. All utilities shall be placed underground.

- c. The 80' x 160' new building will be constructed of steel and have a roof pitch of 3/12.

guzzo-dyerrd.txt (nct)
4/14/15 S:Docs/s&htxts/2015

GENERAL NOTES

SPECIFICATIONS

The City of Columbus Construction and Material Specifications(CMCS) 2012, including supplemental specification 1100 and all other supplements thereto, shall govern all construction items that are a part of the plan unless otherwise noted.

UTILITY OWNERSHIP

The Contractor is responsible for the investigation, location, support, protection, and restoration of all existing utilities and appurtenances whether shown on these plans or not. The Contractor shall expose all utilities or structures prior to construction to verify the vertical and horizontal effect on the proposed construction. The Contractor shall call, toll free, the Ohio Utilities Protection Service (1-800-362-2764) 72-hours prior to construction and shall notify all utility companies at least 48-hours prior to work in the vicinity of their underground lines.

WARNING: The following City of Columbus Utilities are not a member of the Ohio Utilities Protection Service. The contractor shall contact the City of Columbus Division of Water, (614) 645-8276, any marking request before commencement of any excavation.

Where plans provide for a proposed sewer to be connected to, or cross over or under an existing sewer or underground utility, the Contractor shall locate the existing pipes or utilities, both as to line and grade before starting to lay the proposed sewer. These locations are noted thus: **EXPOSE**. The cost of this work shall be included in the unit price bid for CMSC Item 901.

MODIFICATIONS

Any modification to the work as shown on these drawings must have prior written approval by Jackson Township and/or The Franklin County Engineer.

DEFLECTION TESTING

All plastic sewer lines shall be deflection tested after installation in conformance with the requirements of item 901 of the City of Columbus, Construction and Material Specifications, current version (2012).

CERTIFICATION OF PIPE AND STRUCTURES

All concrete pipe, storm and sanitary sewer structures will be stamped or have such identification noting that said pipe, storm and sanitary structures have been inspected by the City of Columbus and meets their specifications. Pipe and structures without proper identification will not be permitted for installation.

EROSION CONTROL

Erosion and sediment control measures are required as part of this project. Erosion and Sediment Control measures specific to this site may be found on Sheets No. 8 of this plan. Land-disturbing activities must comply with all provisions of the Franklin County Soil and Water Conservation District EROSION AND SEDIMENT CONTROL REGULATION. All land-disturbing activities shall be subject to inspection and site investigation by the Franklin County Soil and Water Conservation District and/or the Ohio EPA.

GRADE CHECKS

The Contractor shall ensure there is a surveyor's level and rod on the project for use in performing grade checks whenever sewer line structures or pipe are being installed. The Contractor shall make this equipment available for use and assist the County inspector in performing grade checks when requested by the inspector. The inspector will make all reasonable attempts to confine requests for assistance in performing grade checks to times convenient to the Contractor.

These checks will be performed to ensure the following:

1. Proper placement of each structure.
2. Proper installation of pipe runs.
3. Grade, after an overnight or longer shutdown.
4. Grade, at any other time the inspector has reason to question grade of installation.

Grade checks performed by the County inspector in no way relieve the Contractor of the ultimate responsibility to ensure construction to the plan grade.

PONDING / DETENTION AREAS

The ponding or detention areas shown on the plans are a part of the storm sewer facilities. The Developer/Owner will assume the responsibility to maintain the ponding or detention areas so as not to reduce the water storage areas. If the Owner does not maintain the ponding and detention areas, the plan will become void and the County will plug the sewer at the outlet.

AS-BUILTS

As a condition of final acceptance, the property owner shall be responsible for providing as-built surveys to verify the final grades and elevations of stormwater detention basins and wetlands that are to be owned and operated by the City. At the completion of home construction, the Owner/Developer shall field survey the stormwater detention facility to verify that the facilities are constructed according to approved plans. Should a discrepancy between the plans and constructed grades exist, the design storage of the detention facility shall be restored by the Owner/Developer as directed by the Franklin County Engineer.

PERMITS

The Contractor is to obtain all necessary permits. An original permit, with red signatures, shall be kept onsite at all times.

100 YEAR DETENTION TABLE

LOCATION	STORAGE VOL. REQUIRED	STORAGE VOL. PROVIDED	MAX. W.S. ELEVATION
DETENTION POND	15,584 CF	16,575 CF	735.85

Note: Downspout drains shall be directed to swales around proposed and existing buildings, to provide positive drainage away from structures.

SITE IMPROVEMENT PLAN

KICKMASTER FOOTGOLF

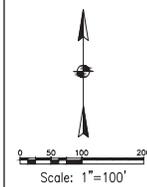
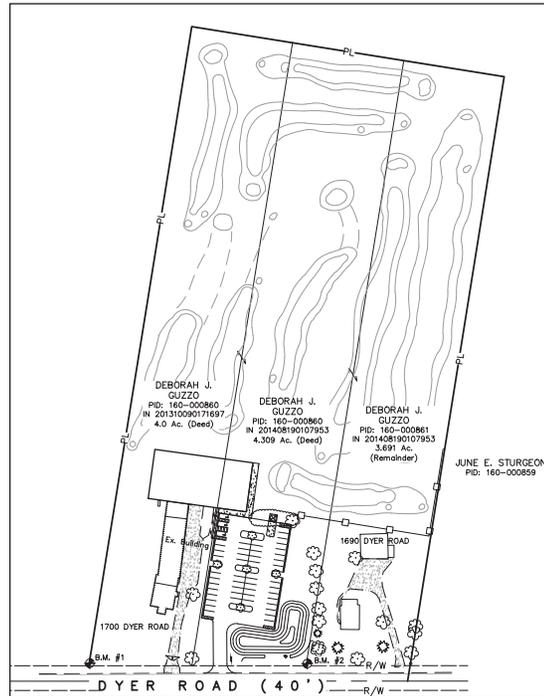
1700 DYER ROAD

JACKSON TOWNSHIP, FRANKLIN COUNTY, OHIO

2015



LOCATION MAP
N.T.S.



SITE DATA TABLE:

Total Site Area:	4.203 Ac.
% of Lot Area Covered by Buildings:	4.5%
% Impervious Area:	9.3%
Pervious Area:	3.814 Ac.
Parking Spaces:	55 Spaces

BENCHMARKS:

All bench marks and elevations shown upon this plan are based on the (NAVD88) North American Vertical Datum of 1988.

All elevations shown on these drawings are based on the vertical component of 0001's VRS RTK Network, which is based on NAVD88 as determined by National Geodetic Survey (NGS)

BM1

A 3/4" iron pin found at the southwest corner of 1700 Dyer Road.
N 692789.88, E 1816806.56
Elevation = 742.08

BM2

A iron pin found and capped "Patriage" at the southeast corner of 1700 Dyer Road and the southwest corner of 1690 Dyer Road.
N 692849.01, E 1817153.54
Elevation = 733.10

Note: The Contractor shall carefully preserve benchmarks, property corners, reference points, and stakes. Any benchmark, property corner, or survey marker damaged or disturbed by the Contractor shall be reset by an Ohio Registered Surveyor at the Contractor's expense.

Owner/Developer Information:

DEBORAH J. GUZZO
1700 DYER ROAD
GROVE CITY, OHIO 43123
Contact: DEBORAH J. GUZZO
PH: 614-595-8659

Civil Engineer Information:

E.P. FERRIS & ASSOCIATES
880 KING AVENUE
COLUMBUS, OHIO 43212
Contact: SEAN GILLILAN, P.E.
PH: 614-299-2999
FAX: 614-299-2992
EMAIL: sgillilan@epferris.com

Architect Information:
NEW AVENUE ARCHITECTS & ENGINEERS
4740 REED, ROAD, SUITE 201
UPPER ARLINGTON, OHIO 43220
Contact: MICHAEL MAISTROS
PH: 614-884-8888
FAX: 614-884-8448
EMAIL: mmaistros@new-avenue.net

INDEX MAP

Scale: 1"=100'

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STANDARD CONSTRUCTION DRAWINGS

ODOT		COLUMBUS (ODSD)	
NUMBER	DATE	NUMBER	DATE
CB-1.2	07/20/12	AA-S133A	12/06/13
		AA-S139	12/06/13
		AA-S169	12/06/13

REVISIONS

NO.	DATE	DESCRIPTION	BY

SHEET NO.	OF
1	8

Drawing No. 107700_1000epferris.com/Production Drawings/Thruway Survey on 07-22-12 10:46 Modified by: epfer - Update 1 - 100% scale 1"=100'



CONTACT:
880 KING AVENUE
COLUMBUS, OHIO 43212
(614) 299-2999
(614) 299-2992 (Fax)
www.EPFERRIS.com



REGISTERED ENGINEER _____ DATE _____

GENERAL NOTES

WHEELCHAIR RAMP TRAINING REQUIREMENT: Any contractor or subcontractor involved in directing, planning, layout, and/or constructing wheelchair ramps or other amenities required under the Americans with Disabilities Act of 1990 (ADA) shall have previously attended a City sponsored training session to be permitted to execute work on this project. This shall include, but not be limited to, project superintendents, supervisors and foremen. Laborers are encouraged, but not required, to attend. For more information contact the City of Columbus ADA section at 645-0285.

DRIVE APPROACH, PEDESTRIAN FACILITY AND CURB RAMPS: All drive approaches, pedestrian facility, curbs, and ramps constructed with this project shall meet the requirements of the City of Columbus standards and ADA compliance. It is the sole responsibility of the Contractor to meet these construction standards.

CITY WATER

SERVICE BOX ADJUSTMENT: The Contractor shall adjust existing Utility Valve Boxes and Service Boxes to grade within the construction area. The Contractor shall replace any damaged Curb Box encircled while relocating Water Service Taps as directed by the Engineer. Any damage to Curb, Utility, and Service Boxes caused by the Contractor shall be replaced by the Contractor at his own expense as required by CMSC 105.07.

FIRE HYDRANT PERMIT: The Contractor must obtain from the Division of Power and Water (Water) a fire hydrant permit prior to connection of this water supply lines to any fire hydrant. The Contractor shall provide the necessary gate valves, backflow preventers, and flow meter for each hydrant location. All equipment, fittings and valves shall be in accordance with Division of Power and Water (Water) standards. The Contractor shall pay for water at the Contractor at his own expense as required by CMSC 105.07.

INTERRUPTION OF WATER SERVICE: The Contractor shall give written notice to all affected property owners at least 24 hours, but not more than 72 hours, prior to any temporary interruption of water service. Interruption of water service shall be held to a minimum and shall be approved by the Division of Power and Water (Water).

TRENCHING

Excavating and backfilling for sewers, shall comply with CMSC Item 901. The Contractor shall excavate all material of whatever nature encountered, including rock, and remove excess material from the site. No additional payment will be made for rock excavation. Blasting is not permitted.

If unsuitable material is encountered at the subgrade of the trench, the treatment of this material shall follow CMSC Item 901.06. Replacement of unsuitable material with stone foundation specified in CMSC Item 901.06 is required if dewatering of the subgrade does not produce a subgrade acceptable to the Engineer.

Any excavation performed beyond the standard trench width, as defined on Division of Sewerage and Drainage Standard Construction Drawings AA-5149, AA-5150, and AA-5151 due to site conditions or the Contractor's methods are done so solely at the Contractor's expense. No extra payment will be made for unauthorized excavation.

All existing pavements, walkways, curbs, etc. shall be saw cut before removal. If during construction, the pavement, walkway, curb, etc. is damaged beyond the original saw cut, the damaged area shall be resurfaced by the Engineer. Payment for saw cutting shall be included under CMSC Item 901.

BACKFILL: Trench backfill shall be per CMSC Item 901.17. No additional compensation shall be made for trenches requiring CMSC Item 911, Compacted Backfill. The cost for backfilling trenches with CMSC Item 911, Compacted Granular Material shall be paid for under the applicable Item 901 - 12" Storm Pipe, with Type 1 Bedding, including 912 Backfill", no separate payment shall be made for Item 912, Compacted Granular Material.

All points of crossing water mains or other sewers, the backfill shall be granular material between the deeper and shallower pipes.

All trenches within the road right-of-way shall be backfilled or securely plated during non-working hours.

The Contractor shall be responsible for the condition of the trenches for a period of one (1) year from the date of final inspection. The cost of this work shall be included under CMSC Item 901.

DEWATERING: Should water be encountered, the Contractor shall furnish and operate suitable pumping equipment of such capacity to adequately dewater the trench per CMSC Item 901.06. The trench shall be sufficiently dewatered so that the placement of bedding and laying and joining of the pipe is made on firm, dry ground. The Contractor shall convey all trench water to a natural drainage channel or storm sewer without causing any damage to the property by utilizing proper erosion and sediment controls. Direct discharge of sediment laden water to the County's sewer system or a receiving stream is a violation of Ohio EPA and Jackson Township regulations; the Contractor will be held liable for the violation and subsequent fines. The cost of all dewatering work shall be included in the unit price bid for CMSC Item 901.

SEWERS

EXISTING SYSTEMS: Existing drainage systems (field tiles, roof drain outlets, sump pumps, etc.) encountered during construction of the new storm sewer or removal of existing storm sewers shall be extended as necessary and blind tagged to the new storm sewer per City of Columbus Division of Sewerage and Drainage Standard Drawing AA-5152 or connected to the catch basin as directed by the Engineer. All costs associated with this work shall be included in CMSC Item 901.

If the Contractor encounters a pipe or connection to the storm sewer that in the estimate of the Engineer may be an illicit connection from an on-site sewage disposal system, the Franklin County Board of Health shall be contacted at (614) 545-3160 to determine whether the pipe may be reconnected to the City's storm sewer system.

Roof drains, foundation drains, and other clean water connections to the sanitary sewer system are prohibited.

GRADE CHANGES: If it is determined that the elevation of the existing sewer, or existing appurtenance to be connected, differs from the plan elevation or results in a change in the plan sewer slope, the Engineer shall be notified before starting construction of any portion of the proposed sewer which will be affected by the variance in the existing elevations.

If it is determined that the proposed sewer will intersect an existing sewer or underground utility if constructed as shown on the plan, the Engineer shall be notified before starting construction of any portion of the proposed sewer which would be affected by the interference with an existing facility.

Grades and elevations shown on the plans shall not be revised under any circumstances without first obtaining written approval from the Engineer. Invert elevations shall not deviate from plan elevation by more than 0.05 foot. Failing to meet the above requirements is cause for rejection of the affected section of sewer.

STRUCTURE ADJUSTMENT: The Contractor shall field verify the top of casting elevation of all new stormwater structures. If precast structures are utilized the top 6 inches minimum shall be field placed either with grade rings or brick and mortar to allow for field adjustment. The cost for this work shall be included in the unit price bid for the applicable CMSC Item 604.

If the Engineer determines that an inlet is too low after it has been placed and rough grading performed, the Contractor shall adjust the inlet as directed by the Engineer and regrade the area accordingly. The cost to adjust the inlet shall be paid for in the unit price bid for CMSC Item Special - Inlet Adjust to Grade, As Directed by Engineer, and shall constitute full payment for adjusting the inlet including grade rings, concrete, excavation, backfill, regrading, etc.

MANHOLE STEPS: Manhole steps shall be reinforced polypropylene plastic per DQSD Std. Construction Drawing AA-5119. Payment for manhole steps shall be included in the unit price bid for CMSC Item 604, Manhole.

STORMWATER FACILITIES: Before any work is started on the project and again before final acceptance by the Owner, the Engineer and the Contractor shall make an inspection of all existing sewers which are to remain in service and which may be affected by the work. The condition of the existing conduits and their appurtenances shall be determined from field observations. The Engineer shall keep records of the inspection in writing.

All new conduits, inlets, catch basins, and manholes constructed or reconstructed as a part of the project shall be free of all foreign matter and in a clean condition before the project will be accepted by the Owner.

All existing manholes, catch basins, drains, sewers, and appurtenances inspected initially by the above mentioned parties shall be maintained and left in a condition reasonably comparable to that determined by the original inspection. Any change in the condition resulting from the Contractor's operations shall be corrected by the Contractor to the satisfaction of the Engineer. The above is not applicable for structures to be abandoned. The Contractor shall remove debris, silt, etc. from the existing manholes and catch basins that have been affected by construction operations. The Contractor shall maintain service in existing sewers during construction. All existing charted or uncharted storm sewers encountered during construction shall be connected into the new system. The cost of this work shall be included in the unit price bid CMSC Item 901.

TREES

PRESERVATION: All trees, whether shown or not shown on the plans, are to be preserved unless approval to remove is given in writing by the Engineer or their removal has been designated on the plans. All trees to be removed shall be marked with a red "X" and shall be paid for under CMSC Item 201, Clearing and Grubbing. The Contractor shall use special precautions to avoid damage to all other trees. All trees removed shall include stump removal to 6 inches below grade. All wood over 4-inch diameter shall, at the property owner's discretion, be cut into lengths not exceeding 16 inches and stacked on the owner's property adjacent to the removal site. The cost for tree stump removal shall be included in the price bid for CMSC Item 201, Clearing and Grubbing.

PRUNING: Branches or growth that interfere with the free construction of the project may be removed from trees/bushes that are to be saved by the use of pruning tools with prior approval from the Engineer. All pruning tools used and methods employed shall meet the approval of the Engineer. The branches shall be removed with a good clean cut made flush with the parent trunk or if having a good healthy lateral branch, the cut shall be a good clean slanting cut close to and beyond the healthy branch. All pruning cuts shall be spotted with an accepted pruning preservative. The cost of all work and expenses connected with tree pruning shall be included in the price bid for CMSC Item 201, Clearing and Grubbing. No extra payment shall be made.

Trees damaged or destroyed that were not designated for removal or approved by the Engineer for removal shall be replaced at the Contractor's expense. If suitable replacement cannot be determined, compensation by the Contractor for unauthorized tree removal shall include sufficient additional landscaping as determined by Jackson Township.

EROSION CONTROL

SEEDING AND SOODING: The Contractor shall seed and mulch all disturbed areas in conformance with CMSC Item 659 - Seeding and Mulching. The area for payment shall be computed by multiplying the length of the disturbed area as measured along the centerline of the pipe, times the width of the disturbed area as defined by the plans. Payment will be made under CMSC Item 659 - Seeding and Mulching at the unit price bid per square yard for the quantities as determined from the measurements specified above. Payment for watering shall be included in the unit price bid for CMSC Item 659 - Seeding and Mulching, no separate payment shall be made for watering. In case an area outside these limits is damaged and is in need of grading and seeding, it shall be done at the Contractor's expense.

The Contractor shall water seeded areas at a rate of 300 gallons per 1,000 square feet as soon as the seed is covered. The Contractor shall water all seeded areas at a rate of 120 gallons per 1,000 square feet every other day for four weeks. Watering shall be performed in the morning between 6:00am and 10:00am and shall be applied by means of a hydro-seeder or a water tank under pressure with a nozzle that will produce a spray that will not dislodge the mulching material. The cost for water shall be included in the cost for Item 659 - Seeding and Mulching.

MAINTENANCE: Maintenance shall begin immediately after any area is seeded and shall continue for a minimum four-week active growing period following the completion of all seeding work, and until final acceptance of the project. In the event that seeding operations are completed too late in the fall for adequate germination and growth of grass, then maintenance shall continue into the following spring.

Maintenance shall include reseeding, mowing to maintain a height of 3 inches, watering, weeding, fertilizing and resetting and straightening of protective barriers. Maintenance shall also include chemical treatments as required for fungus and/or pest control.

It shall be the Contractor's responsibility to protect and maintain the seeded areas. After the grass in seeded areas has appeared, all areas and parts of areas that, in the opinion of the City, fail to show a uniform stand of grass for any reason whatsoever shall be reseeded and such areas and parts of areas shall be reseeded repeatedly until all areas are covered with a satisfactory growth of grass. Reseeding together with necessary grading, fertilizing, and trimming shall be done at the expense of the Contractor.

The following estimated quantity has been carried to the Estimated Quantities for the work described above.

CMSC 659 - Seeding and Mulching 7,500 S.Y.

TOPSOIL: The requirements of CMSC Item 653 shall govern the construction of this work. Four inches of topsoil shall be placed over all disturbed areas that are to be seeded and mulched. Final grades shall conform to those shown on the plans. Topsoil found suitable by the Project Engineer during clearing and grubbing shall be segregated from the other excavated material and stockpiled for reuse. Payment for segregating, stockpiling and reuse of stockpiled topsoil shall be included in the amount bid for CMSC Item 901. If stockpiled topsoil is insufficient, the Engineer may direct the Contractor to import additional topsoil. Imported topsoil shall be paid for under the unit price bid for CMSC Item 653, Topsoil Fertilized and Placed, as directed by the Engineer.

DUST CONTROL: The following estimated quantities are to be used as directed by the Engineer for dust control.

CMSC 616 - Water 0.5 MGAL
 CMSC 616 - Calcium Chloride 0.5 TONS

TEMPORARY SEDIMENT AND EROSION CONTROL: Erosion and Sediment Control Measures area included as part of this plan. Reference Sheet 5 for Erosion Control Details.

It is the responsibility of the site Owner to notify the Franklin County Soil and Water Conservation 2 working days prior to the commencement of the initial site land disturbance on any site of two or more acres. This includes site clearing, grubbing, and earth moving. Primary Erosion and Sediment Control practices are mandated by regulation to be in place from the beginning of the construction activity. Contact David Reutter at (614) 486-9613

Land-disturbing activities must comply with all provisions of the Division of Sewerage and Drainage Erosion and Sediment Control regulation. All Land-Disturbing activities shall be subject to inspection and site investigation by the Franklin County Soil and Water Conservation and/or the Ohio EPA. Failure to comply with these regulations is subject to legal enforcement action.

Temporary and/or permanent seeding within the designated work limits shall be completed in accordance with the specifications of the mass excavation improvements. Reference Sheet 5 for seeding specifications.

Direct discharge of sediment laden water to the County's sewer system or a receiving stream is a violation of Ohio EPA and Franklin County regulations.

SOIL STOCKPILES: All soil stockpiles, including trench excavation stockpiles shall be protected from erosion by perimeter control devices such as straw bale dikes or silt fences. These perimeter control devices shall be maintained throughout the life of the project. Excavated materials shall not be stored on existing public roadway pavements. This includes excess or unusable excavated soil.

DISPOSAL OF EXCESS EXCAVATION: The Contractor shall dispose of all excess excavation at such location on the project site as approved by the Engineer. For disposal outside of the limits of the project the Contractor shall provide a copy of the signed, written agreement between the Contractor and the off-site landowner before such disposal occurs. This written agreement shall clearly state the purpose of the agreement and indicate the landowner's permission for such use.

STORM SEWER INLET PROTECTION: All storm sewer inlets shall be protected from excessive amounts of sediments using adequate filtering devices as approved by the Franklin County Soil and Water Conservation District. These devices shall be maintained until the denuded area has been stabilized, or as directed by the Engineer. The cost of this work shall be included under CMSC Item 207 - Storm Sewer Inlet Protection. Straw or hay bales are not approved for inlet protection.

MISCELLANEOUS

NON-RUBBER Tired VEHICLES: Non-rubber tired vehicles shall be moved on public streets or roads. The County Engineer/Township may grant exceptions where short distances and special circumstances are involved. Granting of exceptions must be in writing and any resulting damage must be repaired to the satisfaction of the respective jurisdiction.

CLEAN-UP: All debris, rubble, unusable materials, and items not salvaged by the Owner shall become the property of the Contractor and shall be removed from the site by the Contractor and disposed of properly. The Contractor shall restore disturbed areas to their original elevation on equal or better condition that existed before construction. The Contractor shall immediately clean any dirt, sediment or mud deposited on County/Township roads, on or off the project site. The Engineer may require the Contractor to perform weekly street cleaning if excessive amounts of dirt and mud are left along the street. This may include removal by sweeping, power cleaning, or manual methods. The cost of this work shall be included in the unit price bid for CMSC Item 901, unless otherwise specified.

EXTRA COMPENSATION: The Contractor shall furnish all labor, materials, tools, equipment, services, and related accessories for a complete project as described in the plans and specifications. The price for items of work, or materials shown on the plans or provided for in the specifications or special provisions for which no separate unit price is given shall be distributed among the various bid items. Submission of a bid shall be considered evidence that the bidder is satisfied with the plans and conditions as shown. No additional compensation will be paid to the Contractor for compliance with the plans, specifications, or special provisions.

DRIVE APPROACH, PEDESTRIAN FACILITY, AND CURB RAMP: All drive approaches, pedestrian facility, curbs, and ramps constructed with this project shall meet the requirements of the City of Columbus standards and ADA compliance. It is the sole responsibility of the Contractor to meet these construction standards.

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REVISIONS	DATE	BY	CHK



CONTACT:
 880 KING AVENUE
 COLUMBUS, OHIO 43212
 (614) 299-2999
 (614) 299-2992 (Fax)
 www.EPFERRIS.com

JACKSON TOWNSHIP, FRANKLIN COUNTY, OHIO

1700 DYER ROAD

KICKMASTER FOOTGOLF, LLC

JOB NO. 1077.001	SCALE:
DESIGNED BY: SWG	N/A
DRAWN BY: CLP	
CHECKED BY: SWG	
APPROVED BY: _____	
DATE: 04/14/15	

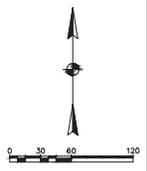
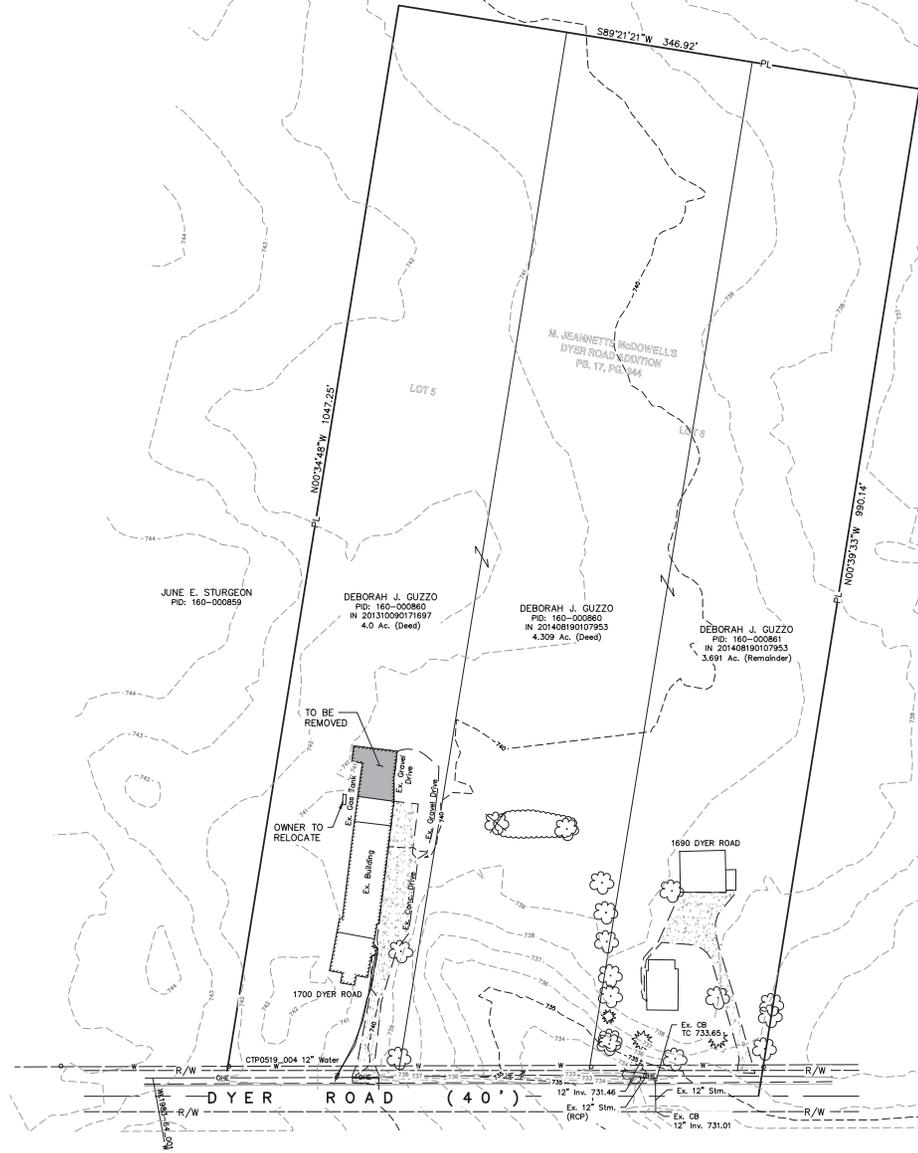
GENERAL NOTES	
SHEET NO.	OF
2	8

LEGEND

- ⊗ Ex. Fire Hydrant
- ⊠ Ex. Pull Box
- ⊕ Ex. Tree
- ⊡ Ex. Catch Basin
- ⊙ Ex. Sanitary Manhole
- ⊖ Ex. Storm Manhole
- ⊓ Ex. Storm Curb Inlet
- ⊔ Ex. Utility Pole
- ⊕ Ex. Light Pole
- ⊖ Ex. Gas Service Valve
- ⊗ Ex. Underground Tele. Pedestal
- ⊘ Ex. Water Service Valve
- ⊙ Ex. Sign
- X — Ex. Fence
- W — Ex. Water Line
- WS — Ex. Water Service
- UGT — Ex. Underground Telephone
- G — Ex. Gas
- ST — Ex. Storm
- SA — Ex. Sanitary
- UGE — Ex. Underground Electric
- OHE — Ex. Overhead Electric
- Prop. Catch Basin
- Prop. Storm Manhole
- STM — Prop. Storm Sewer
- DS — Prop. Downspout Line
- SS — Prop. Sanitary Srv.
- WS — Prop. Water Srv.
- ▭ Ex. Concrete Walk/Drive
- CO₂ Prop. Clean-out
- DND Do Not Disturb
- ➔ Proposed Flood Route
- ➔ Proposed Drainage Flow Directional Arrow
- ⊗ Tree to be Removed

NOTE: (TBR) Shall mean to be removed.

NOTE: Existing topography and conditions is a combination of field survey data, County GIS data, and existing plan records. The contractor should verify all conditions prior to commencing construction activities.



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REVISIONS	DATE	BY	CHK.

E. P. FERRIS
 AND ASSOCIATES
 INC.
 Consulting Civil Engineers and Surveyors

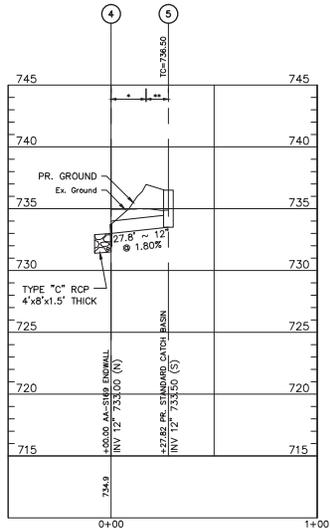
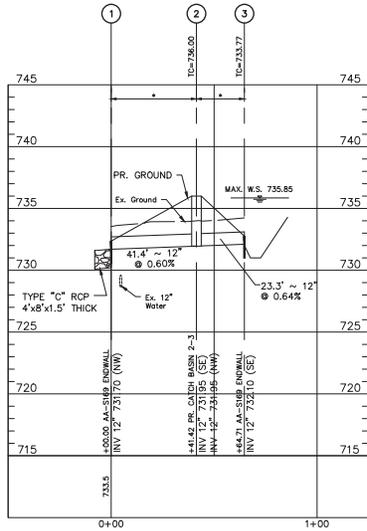
CONTACT:
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 COLUMBUS, OHIO 43212
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 (614) 299-2992 (Fax)
 www.EPFERRIS.com

JACKSON TOWNSHIP, FRANKLIN COUNTY, OHIO
1700 DYER ROAD
 KICKMASTER FOOTGOLF, LLC

JOB NO. 1077.001
 DESIGNED BY: SWG
 DRAWN BY: CLP
 CHECKED BY: SWG
 APPROVED BY: _____
 DATE: 04/14/15

EXISTING CONDITIONS

SCALE:	1" = 60'
SHEET NO.	OF
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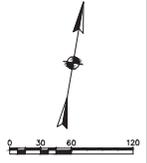
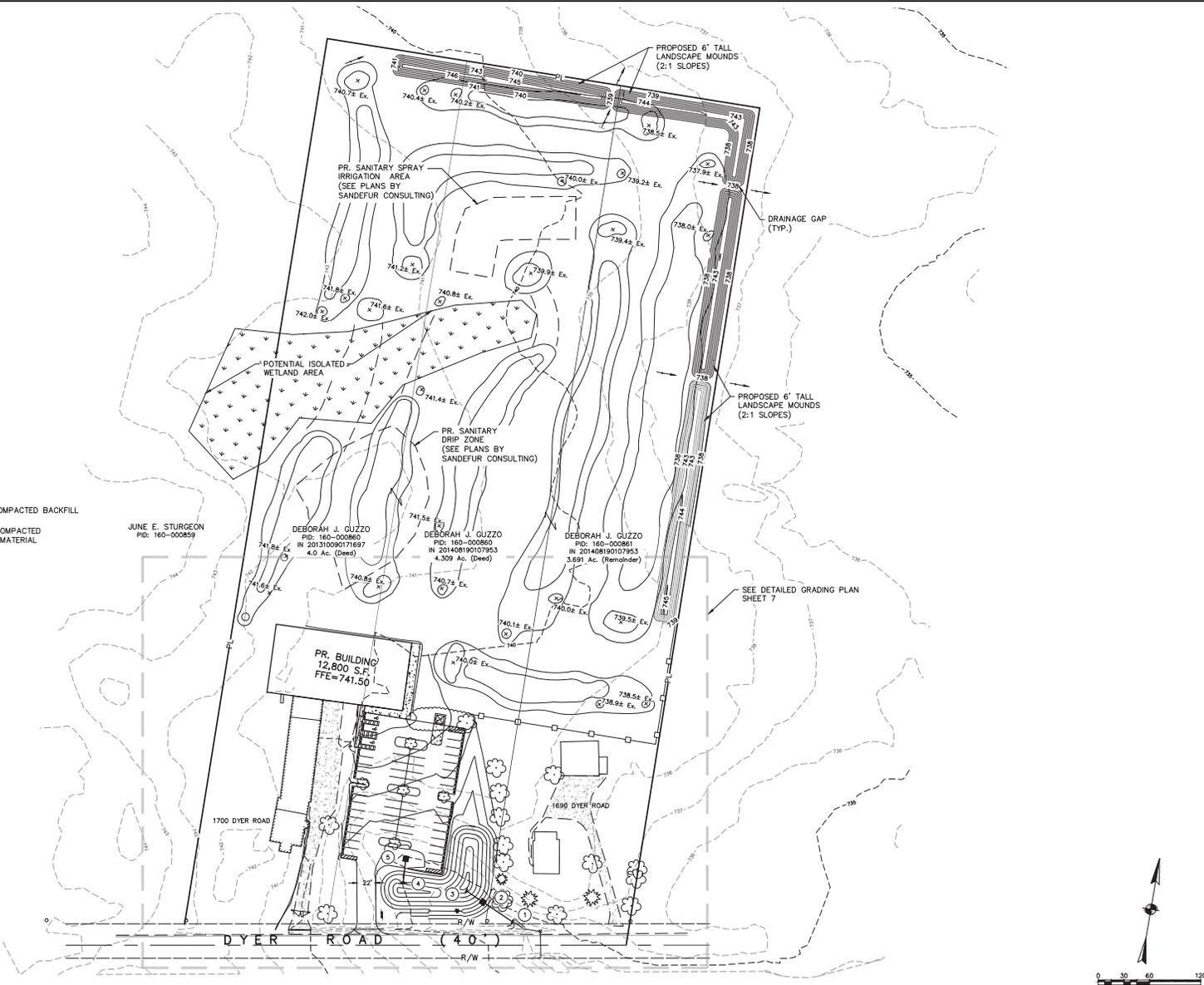
- NOTE:
- * ITEM 911 COMPACTED BACKFILL
 - ** ITEM 912 COMPACTED GRANULAR MATERIAL

JUNE E. STURGEON
 PID: 160-000859

DEBORAH J. GUZZO
 PID: 160-000860
 IN 201310090171697
 4.0 Ac. (Deed)

DEBORAH J. GUZZO
 PID: 160-000860
 IN 201408160107863
 4.309 Ac. (Deed)

DEBORAH J. GUZZO
 PID: 160-000861
 IN 201408160107853
 3.691 Ac. (Remainder)



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REVISIONS	DATE	BY	CHK.

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JOB NO.	1077.001
DESIGNED BY:	SWG
DRAWN BY:	CLP
CHECKED BY:	SWG
APPROVED BY:	
DATE:	04/14/15

OVERALL GRADING PLAN

SCALE:	1" = 60'
SHEET NO.	OF
6	8

EROSION AND SEDIMENTATION CONTROL NARRATIVE
 DEFA NPDES GENERAL PERMIT NUMBER:

PLAN DESIGNER:
 E.P. Ferris & Associates
 880 King Ave
 Columbus, OH 43212
 Phone: 614-299-2999 Fax: 614-299-2992

OWNER:
 Deborah J. Guzzo
 1700 Dyer Road
 Grove City, Ohio 43123

DEVELOPER:
 Deborah J. Guzzo
 1700 Dyer Road
 Grove City, Ohio 43123

PROJECT DESCRIPTION:
 The existing site consists of a residential lot in Franklin County, Ohio. The proposed improvements include a parking lot, detention pond, storm sewers, topsoil course, and utilities. Disturbed area is limited on the lot to the above mentioned improvements.

SITE DRAINS TO:
 The developed portion of the site is proposed to drain into an existing storm sewer system along Dyer Road. This area is tributary to the Moran Run watershed, which ultimately drains to the Scioto River.

SOILS:
 OA - Crosby Silt Loam 0%-2% slopes; Or - Crosby Silt Loam 2%-6% slopes; Ko - Kokomo Silt Clay Loam 0%-2% slopes

EXISTING SITE CONDITIONS:
 The site is vegetated with short grasses, sparsely wooded with existing trees on the southeastern portion of the property, densely wooded with existing trees on the northwestern portion of the site. The site drains into one watershed.

ADJACENT AREAS:
 The existing adjacent developments have been taken into account for the storm system and flood routing following existing drainage path.

CRITICAL AREAS:
 A potential wetland located on the western portion of the site.

EROSION CONTROL MEASURES:
 Erosion and silt run-off will be controlled through the use of filter fabric fence placed at low lying areas around the site.

SEDIMENT CONTROL MEASURES:
 Sediment will be controlled through the use of inlet protection at proposed existing basins. Sediment basins will be constructed in the permanent detention basins until vegetation is established for the basins.

PERMANENT STABILIZATION:
 All disturbed areas are to be seeded.

MAINTENANCE:
 All erosion control devices will be inspected by the construction superintendent daily and after significant rainfalls. Any damaged devices will be repaired and/or replaced immediately or as necessary.

CONSTRUCTION SEQUENCE:
 Erosion control devices around and within the site will be in place as needed prior to construction activities. Initial grading will commence as well as construction of underground utilities. As storm sewers are completed, trash/catch basin erosion devices will be installed. Only after final grading, seeding/sodding and paving operations have been completed will erosion devices be removed.

SITE CONTACT:
 Deborah Guzzo
 1700 Dyer Road, Grove City, Ohio 43123
 (614) 595-8659

SEDIMENT & EROSION CONTROL NOTES:

EROSION/SEDIMENT/DUST CONTROL CONSTRUCTION PRACTICES
 UTILIZE EROSION AND SEDIMENT CONTROL PRACTICES FOR THE SOIL CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS. EROSION CONTROL DEVICES ARE TO BE MAINTAINED IN EFFECTIVE WORKING CONDITION DURING CONSTRUCTION AND UNTIL THE CONSTRUCTION AREA HAS BEEN PERMANENTLY STABILIZED. THE CONTRACTOR SHALL CONSULT WITH SOIL CONSERVATION SERVICE AND THE ENGINEER CONCERNING PROPER EROSION AND SEDIMENT PRACTICES.

STOOPLED TOPSOIL AND EXCAVATED MATERIAL IS TO BE PROTECTED THROUGH THE USE OF TEMPORARY SEEDING, OR COVERED WITH ANCHORED STRAW MULCH.

FINAL GRADING WILL BE CONSISTENT WITH PRE-CONSTRUCTION TOPOGRAPHY TO MAINTAIN DRAINAGE AND AESTHETICS.

REMOVE ONLY THOSE TREES, SHRUBS, AND GRASSES THAT MUST BE REMOVED TO PERMIT ADEQUATE CONSTRUCTION. PROTECT THE REMAINING TO PRESERVE THEIR AESTHETIC AND EROSION CONTROL VALUE.

BACKFILL TRENCHES IMMEDIATELY AFTER COMPACTION. SEED AND MULCH TRENCHES WITHIN TWO WEEKS AFTER TRENCHES ARE OPENED.

SILT FROM CONSTRUCTION OPERATIONS SHALL NOT BE PERMITTED TO ENTER THE STORM DRAIN SYSTEM, WATERWAYS (NATURAL OR MAN-MADE), OR ADJACENT PRIVATE PROPERTY. CONSTRUCTION OCCURRING NEAR STORM DRAIN INLETS OR WATERWAYS (NATURAL OR MAN-MADE) SHALL REQUIRE EROSION CONTROL MEASURES, SUCH AS SILT FENCE AND STRAW BALE BARRIERS TO PREVENT SILT FROM ENTERING THE STORM DRAIN, WATERWAYS (NATURAL OR MAN-MADE) OR ADJACENT PRIVATE PROPERTY.

ALL EROSION/SEDIMENT/DUST CONTROL PRACTICES SHALL BE PERFORMED AS RECOMMENDED BY THE SOIL CONSERVATION SERVICE PUBLICATION "WATER MANAGEMENT AND SEDIMENT CONTROL FOR URBANIZING AREAS".

SEEDING OF DENuded AREAS
 DENuded AREAS SHALL HAVE SOIL STABILIZATION APPLIED WITHIN SEVEN DAYS OF DISTURBANCE IF THEY ARE TO REMAIN SUBSTANTIALLY UNDISTURBED FOR MORE THAN 45 DAYS. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENuded AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. SOIL STABILIZATION SHALL ALSO BE APPLIED WITHIN SEVEN DAYS TO DENuded AREAS WHICH MAY NOT BE AT FINAL GRADE, BUT WHICH WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 45 DAYS.

SEEDING AND MULCHING
 STORM WATER RUNOFF FROM DENuded AREAS SHALL PASS THROUGH A SEDIMENT BASIN OR OTHER SUITABLE SEDIMENT TRAPPING FACILITY. THESE CONTROLS SHALL BE SELECTED AND LOCATED AS DIRECTED BY THE ENGINEER.

CONSTRUCTION ACCESS ROUTES
 MEASURES SHALL BE TAKEN TO PREVENT SOIL TRANSPORT ONTO SURFACES WHERE RUNOFF IS NOT CHECKED BY SEDIMENT CONTROLS, OR ONTO PUBLIC ROADS. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT OFF-SITE TRACKING OF SEDIMENTS BY VEHICLES, EQUIPMENT, AND WORKERS IS MINIMIZED.

SLODGING AND DUMPING
 NO SOIL, ROCK, DEBRIS OR ANY OTHER MATERIAL SHALL BE DUMPED OR PLACED INTO A WATER RESOURCE OR INTO SUCH PROXIMITY THAT IT MAY READILY SLOUGH, SLIP, OR ENDORE INTO A WATER RESOURCE UNLESS SUCH DUMPING OR PLACING IS AUTHORIZED BY THE ENGINEER. UNSTABLE SOILS PRONE TO SLIPPING OR LAND SLIDING SHALL NOT BE GRADED, EXCAVATED, FILLED OR HAVE LOADS IMPOSED UPON THEM UNLESS THE WORK IS DONE IN ACCORDANCE WITH A QUALIFIED PROFESSIONAL ENGINEER'S RECOMMENDATIONS TO CORRECT, ELIMINATE OR ADEQUATELY ADDRESS THE PROBLEM.

ESTABLISHMENT OF PERMANENT VEGETATION
 PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL GROUND COVER IS ACHIEVED WHICH, IN THE OPINION OF THE ENGINEER, IS MATURE ENOUGH TO CONTROL SOIL EROSION SATISFACTORILY AND TO SURVIVE ADVERSE WEATHER CONDITIONS.

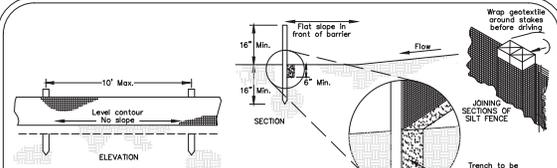
SEEDING AND MULCHING
 1. TEMPORARY SEEDING SHALL CONSIST OF ANNUAL RYE GRASS AS PER ITEM 207. SEED AND MULCHING SHALL BE APPLIED IN ACCORDANCE WITH ITEM 659.
 2. PERMANENT SEEDING AND MULCHING SHALL BE TREATED IN ACCORDANCE WITH ITEM 659.

TIMING OF SEDIMENT-TRAPPING PRACTICES
 SEDIMENT CONTROL PRACTICES SHALL BE FUNCTIONAL THROUGHOUT EARTH-DISTURBING ACTIVITY. SETTLING FACILITIES, PERIMETER CONTROLS AND OTHER PRACTICES INTENDED TO TRAP SEDIMENT SHALL BE IMPLEMENTED AS THE FIRST STEP OF GRADING CONSTRUCTION AND WITHIN SEVEN DAYS FROM THE START OF GRADING. THESE SOILS SHALL CONTINUE TO FUNCTION UNTIL THE UPSLOPE DEVELOPMENT AREA IS RE-STABILIZED. THESE CONTROLS SHALL BE SELECTED AND LOCATED AS DIRECTED BY THE ENGINEER.

NOTE: LOCATIONS SHOWN FOR SEDIMENT FILTERING BARRIERS ARE SUGGESTED LOCATIONS. THE FINAL AND MOST APPROPRIATE LOCATION FOR THESE DEVICES SHALL BE APPROVED BY THE ENGINEER BASED ON SITE CONDITIONS AND OBSERVED TOPOGRAPHY. PROPER IMPLEMENTATION, INSTALLATION, MAINTENANCE, AND REPAIR OF SEDIMENT FILTERING BARRIERS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

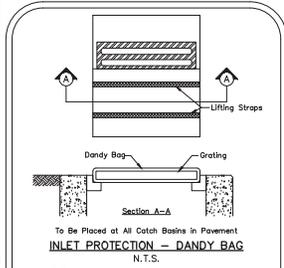
OUTLINES FROM DETAIRING OPERATIONS
 ALL WATER PRODUCED FROM CLEANING AND DETAIRING OPERATIONS, WHETHER SPECIFICALLY FROM TRENCH DETAIRING OPERATIONS OR FROM MORE EXTENSIVE DETAIRING OPERATIONS, SHALL BE DISCHARGED IN SUCH A MANNER AS TO ELIMINATE EROSION FROM SUCH A DISCHARGE BY DIVERTING THE WATER THROUGH ONE OR MORE FILTER FENCES. PRIOR TO PUMPING, THE ENGINEER SHALL APPROVE THE INSTALLATION OF THE FILTER FENCE.

ADDITIONAL CONTROLS
 THE CONTRACTOR SHALL ENSURE THAT NO SEDIMENTS ARE TRACKED OFF-SITE BY CONSTRUCTION EQUIPMENT, VEHICLES, AND WORKERS. THE CONTRACTOR SHALL ALSO ENSURE THAT NO OTHER SOIL (OTHER THAN SOIL SEDIMENT) OR LIQUID WASTE IS DISCHARGED INTO ANY STORM WATER FLOW.



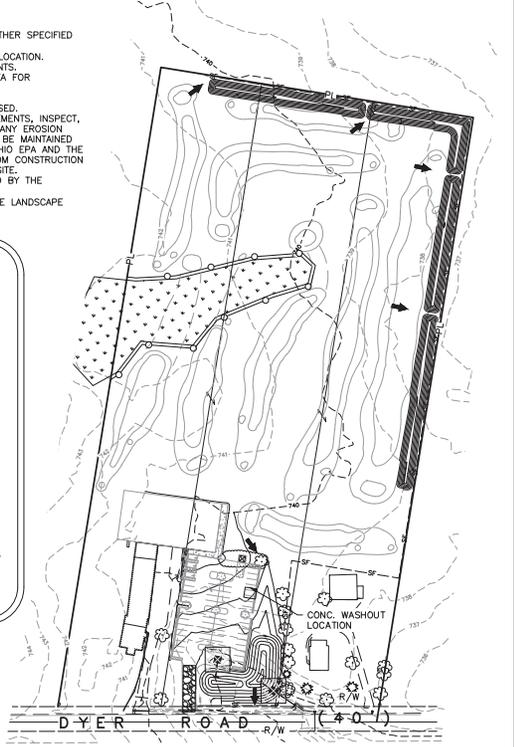
- SILT FENCE**
 N.T.S.
- Silt fence shall be constructed before upslope land disturbance begins.
 - All silt fence shall be placed as close to the contour as possible so that water will not concentrate at low points in the fence and so that small areas or depressions that may carry small concentrated flows to the silt fence are dissipated along its length.
 - Ends of the silt fence shall be brought upward slightly so that water ponded by the silt fence will be prevented from flowing around the ends.
 - Silt fence shall be placed on the flattest area available.
 - Where possible, vegetation shall be prepared for 5 feet (or as much as possible) upslope from the silt fence. If vegetation is present, it shall be reestablished within 7 days from the installation of the silt fence.
 - The height of the silt fence shall be a minimum of 16 inches above the original ground surface.
 - The silt fence shall be placed in an excavated or silted trench cut a minimum of 6 inches deep. The trench shall be made with a trencher, cable laying machine, sledge machine, or other suitable device that will ensure an adequately uniform trench depth.
 - The silt fence shall be placed with the stakes on the downslope side of the geotextile. A minimum of 8 inches of geotextile must be below the ground surface. Excess material shall lay on the bottom of the 6-inch deep trench. The trench shall be backfilled and compacted on both sides of the fabric.
 - Seams between sections of silt fence shall be spliced together only at a support post with a minimum 6-in. overlap prior to driving into the ground. (See details).
 - Maintenance—Silt fence shall allow runoff to pass only as diffuse flow through the geotextile. If runoff overtops the silt fence, flow under the fabric or around the fence ends, or in any other way drives a concentrated flow discharge, one of the following shall be performed, as appropriate: 1) the layout of the silt fence shall be changed, 2) accumulated sediment shall be removed, or 3) other practices shall be installed.
 - Sediment deposits shall be routinely removed when the deposit reaches approximately one-half of the height of the silt fence.
 - Silt fences shall be inspected after each rainfall and at least daily during a prolonged rainfall. The location of silt fence shall be reviewed daily to ensure its proper location and effectiveness. If damaged, the silt fence shall be repaired immediately.
- Criteria for all fence materials:**
- Fence post—The length shall be a minimum of 32 inches. Wood posts will be 2-1/2" x 2-1/2" nominal dimensioned hardwood of sound quality. They shall be free of knots, splits and other visible imperfections that will weaken the posts. The maximum spacing between posts shall be 10 ft. Posts shall be driven a minimum 16 inches into the ground, where possible. If not possible, the posts shall be adequately secured to prevent overturning of the fence due to sediment/water loading.
 - Silt fence fabric—See chart below.
- | FABRIC PROPERTIES | VALUES | TEST METHOD |
|--------------------------------|----------------|-------------|
| Minimum Tensile Strength | 120 lbs (55 N) | ASTM D 4632 |
| Minimum Elongation @ 60 lbs | 50% | ASTM D 4632 |
| Minimum Puncture Strength | 50 lbs (222 N) | ASTM D 4833 |
| Minimum Tear Strength | 40 lbs (180 N) | ASTM D 4533 |
| Apparent Opening Size | 5, 0.84 mm | ASTM D 4791 |
| Minimum Permeability | 1000" x sec-1 | ASTM D 4491 |
| UV Exposure Strength Retention | 70% | ASTM G 4355 |

- INSTALL WETLAND PROTECTION
- INSTALL SILT FENCE, INLET PROTECTION, AND OTHER SPECIFIED EROSION CONTROL PRACTICES.
- REMOVE ITEMS SCHEDULED FOR DEMOLITION/RELOCATION.
- ROUGH GRADE AREA INTENDED FOR IMPROVEMENTS.
- INSTALL STORM SEWERS AND FINISH GRADE AREA FOR IMPROVEMENTS.
- APPLY TEMPORARY SEEDING.
- CONSTRUCT PAVING AND IMPROVEMENTS PROPOSED.
- UPON INSTALLATION OF PAVEMENT AND IMPROVEMENTS, INSPECT, CLEAN, AND REINSTALL INLET PROTECTION AND ANY EROSION CONTROL DEVICES. EROSION CONTROLS SHALL BE MAINTAINED UNTIL VEGETATION BECOMES ESTABLISHED TO OH EPA AND THE CITY OF DUBLIN STANDARDS. DEBRIS LEFT FROM CONSTRUCTION SHOULD BE COMPLETELY REMOVED FROM THE SITE.
- INSTALL LANDSCAPING, TREES, ETC. AS DETAILED BY THE LANDSCAPE PLAN.
- PROVIDE PERMANENT SEEDING/SODDING PER THE LANDSCAPE PLAN.
- REMOVE EROSION CONTROL PRACTICES.



Installation:
 Stand grate on end. Place Dandy Bag over grate. Roll grate over so that open end is up. Pull up blocks. Tuck flap in. Be sure ends of grate is completely covered by flap or Dandy Bag will not fit properly. Holding handles, carefully place Dandy Bag with grate inserted into catch basin frame so that the red dot on the top of the Dandy Bag is visible.

Maintenance:
 With a stiff bristle broom or square point shovel silt & other debris off surface after each event.



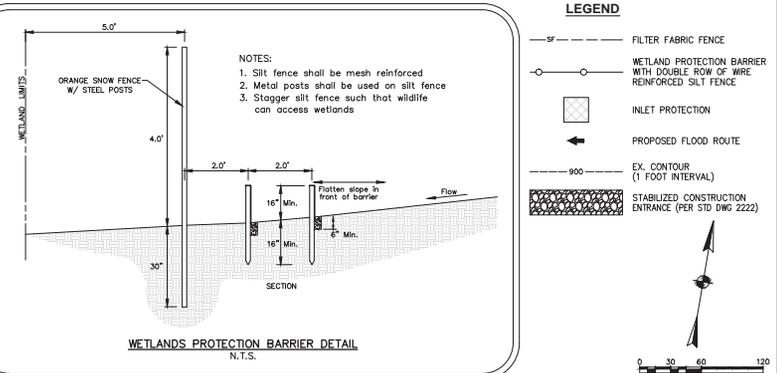
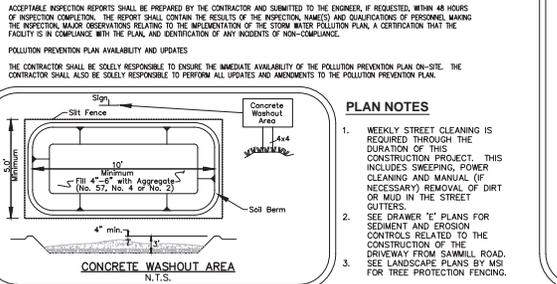
SEDIMENT & EROSION CONTROL NOTES:

- PROHIBITED CONSTRUCTION ACTIVITIES**
 THE CONTRACTOR SHALL NOT USE CONSTRUCTION PROCEDURES, ACTIVITIES, OR OPERATIONS THAT MAY NECESSARILY IMPACT THE NATURAL ENVIRONMENT OR THE PUBLIC HEALTH AND SAFETY. PROHIBITED CONSTRUCTION PROCEDURES, ACTIVITIES, OR OPERATIONS SHALL BE LIMITED TO:
- DISPOSAL OF EXCESS OR UNSUITABLE EXCAVATED MATERIAL, IN WETLANDS OR FLOOD PLAINS, EVEN WITH THE PERMISSION OF THE PROPERTY OWNER.
 - INDISCRIMINATE, ARBITRARY, OR CAPRICIOUS OPERATION OF EQUIPMENT IN ANY STREAM CORRIDORS, ANY WETLANDS, ANY SURFACE WATERS, OR OUTSIDE THE EASEMENT LIMITS.
 - PUMPING OF SEDIMENT-LADEN WATER FROM TRENCHES OR OTHER EXCAVATIONS INTO ANY SURFACE WATERS, ANY STREAM CORRIDORS, ANY WETLANDS, OR STORM DRAINS.
 - DISCHARGING POLLUTANTS SUCH AS CHEMICALS, FUELS, LUBRICANTS, BITUMINOUS MATERIALS, RAW SEWAGE AND OTHER HARMFUL WASTE INTO OR ALONGSIDE OF RIVERS, STREAMS, WETLANDS, OR INTO NATURAL OR MAN-MADE CHANNELS LEADING THERETO.
 - PERMANENT OR UNSPECIFIED ALTERATION OF THE FLOW LINE OF A STREAM.
 - DAMAGING VEGETATION OUTSIDE OF THE CONSTRUCTION AREA.
 - DISPOSAL OF TREES, BUSH AND OTHER DEBRIS IN ANY STREAM CORRIDORS, ANY WETLANDS, ANY SURFACE WATERS, OR AT UNSPECIFIED LOCATIONS.
 - OPEN BURNING OF PROJECT DEBRIS WITHOUT A PERMIT.
 - STORING CONSTRUCTION EQUIPMENT AND VEHICLES AND/OR STOOPILING CONSTRUCTION MATERIALS ON PROPERTY, PUBLIC OR PRIVATE, NOT PREVIOUSLY SPECIFIED BY THE ENGINEER FOR SAND PILES.

MAINTENANCE AND INSPECTION
 ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE DESIGNED AND CONSTRUCTED TO MINIMIZE MAINTENANCE REQUIREMENTS. THEY SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. MAINTENANCE AND INSPECTION OF ALL EROSION/SEDIMENT CONTROL DEVICES REQUIRED BY THE ENGINEER SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. INSPECTION SHALL BE PERFORMED AS PRESCRIBED IN THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT. INSPECTIONS SHALL BE PERFORMED BY THE CONTRACTOR, IN THE PRESENCE OF THE ENGINEER ONCE EVERY 7 CALENDAR DAYS AND/OR WITHIN 24 HOURS AFTER ANY RAIN EVENT OF GREATER THAN 0.5 INCHES IN A 24 HOUR PERIOD. THESE INSPECTIONS SHALL IDENTIFY AREAS CONTRIBUTING TO STORM WATER DISCHARGES ASSOCIATED WITH THE PROJECT, EVALUATE THE RESULTS, IMPLEMENTATION, AND MAINTENANCE OF EXISTING AND PROPOSED EROSION/ SEDIMENTATION MEASURES, AND DETERMINE WHETHER ADDITIONAL MEASURES ARE REQUIRED.

ACCEPTABLE INSPECTION REPORTS SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER, IF REQUESTED, WITHIN 48 HOURS OF INSPECTION COMPLETION. THE REPORT SHALL CONTAIN THE RESULTS OF THE INSPECTION, NAMES AND QUALIFICATIONS OF PERSONNEL MAKING THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE STORM WATER POLLUTION PLAN, A CERTIFICATION THAT THE FACILITY IS IN COMPLIANCE WITH THE PLAN, AND IDENTIFICATION OF ANY INCIDENTS OF NON-COMPLIANCE.

POLLUTION PREVENTION PLAN AVAILABILITY AND UPDATES
 THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO ENSURE THE IMMEDIATE AVAILABILITY OF THE POLLUTION PREVENTION PLAN ON-SITE. THE CONTRACTOR SHALL ALSO BE SOLELY RESPONSIBLE TO PERFORM ALL UPDATES AND AMENDMENTS TO THE POLLUTION PREVENTION PLAN.



REVISIONS	DATE	BY	CHK.

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JACKSON TOWNSHIP, FRANKLIN COUNTY, OHIO
1700 DYER ROAD
 KICKMASTER FOOTGOLF, LLC

JOB NO.	1077.001
DESIGNED BY:	SWG
DRAWN BY:	CLP
CHECKED BY:	SWG
APPROVED BY:	
DATE:	04/14/15

EROSION CONTROL PLAN

SCALE:	1" = 100'		
SHEET NO.	8	OF	8



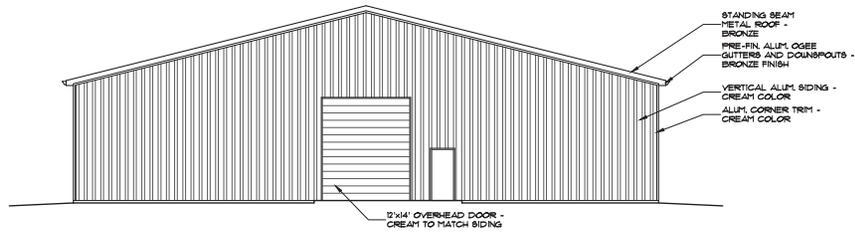
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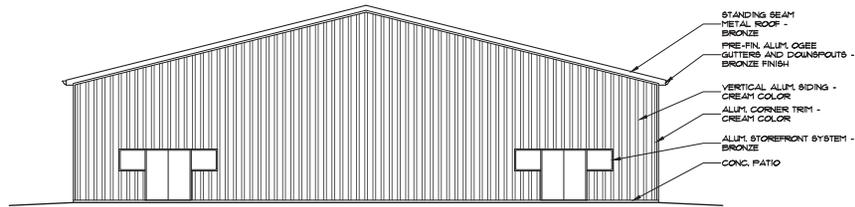
614 . 884 . 8888

ZONING SUBMISSION 02/21/05



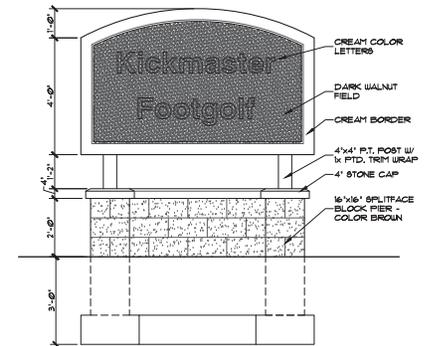
WEST ELEVATION

SCALE: 1/8" = 1'-0"



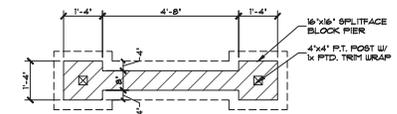
EAST ELEVATION

SCALE: 1/8" = 1'-0"



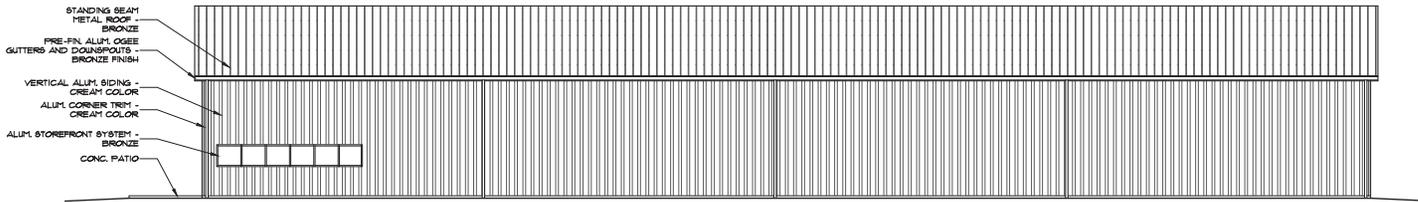
SIGN ELEVATION

SCALE: 1/2" = 1'-0"



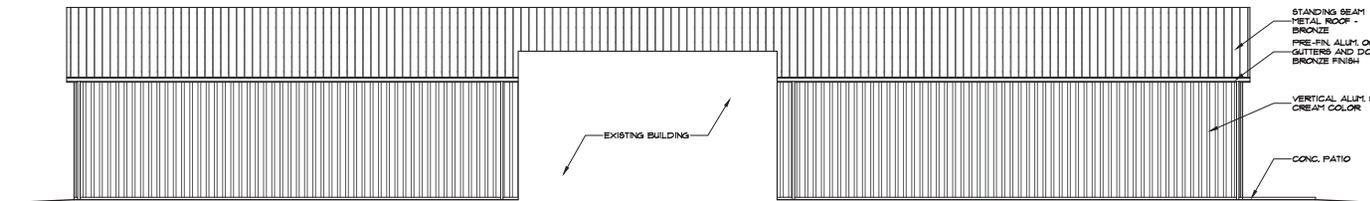
SIGN PLAN VIEW

SCALE: 1/2" = 1'-0"



NORTH ELEVATION

SCALE: 1/8" = 1'-0"



SOUTH ELEVATION

SCALE: 1/8" = 1'-0"

Kickmaster Footgolf
New Clubhouse Structure

1700 Dyer Road
Grove City, Ohio 43123

OWNERS:
Bob Clanin &
Deborah Guzzo

BUILDER:
T.B.D.

Project No: 15-029

EXTERIOR
ELEVATIONS

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A2.1

Stormwater Management Plan

**Kickmaster Golf
1700 Dyer Road**

Franklin County, Ohio

Prepared By:



880 King Ave.
Columbus, Ohio 43212

EP Ferris # 1077-01

I hereby certify that the calculations contained herein are accurate to the best of my knowledge and belief.

By: Michael J. Overstreet, P.E.

Date

INTRODUCTION:

The following report presents the detailed design and analysis of the private storm water management plan for Kickmaster Golf. The project is located at 1700 Dyer Road, Franklin County, Ohio.

The site is being developed by constructing a 12,800 sf building with approximately 0.70 acres of new parking and drive. Grading of mounds, tee boxes and greens for a new golf course will also be a part of this project. The design was calculated to meet Franklin County Stormwater Drainage Manual.

HYDROLOGIC ANALYSIS:

All hydrologic parameters were determined using methodology described in the Franklin County Stormwater Drainage Manual, dated March 2012. Both Pre-Development and Post-Development runoff and peak discharge amounts were calculated through HydroCAD 9.10 software using the SCS method.

PRE-DEVELOPMENT CONDITIONS:

The pre-developed condition of the site consists of approximately 2.55 acres tributary to the proposed pond. (See Pre-developed Tributary Map Appendix B). The site is partially developed with an existing building and drive. Using Table 2.7, a weighted curve number for HSG C was taken from a combination of 50%-75% grass, Fair (2.22 ac. at CN 79) and existing paved area (0.22 ac. at CN 98) yielding a weighted curve number of 81.

The time of concentration used (16.8 minutes) was taken from the SCS Lag method using a hydraulic length of 679 feet with an average slope of 1.80%. The pre-development peak runoff rates are shown in the Routing Summary. The site is tributary to existing ditch along Dyer Road which flows to an existing 12" storm.

The remainder of the site (7.42 Acres) travels from west to east-southeast in mostly non-concentrated sheet flow which drains most of the new golf course

POST-DEVELOPMENT CONDITIONS:

The post-developed condition of the site tributary to the pond consists of 2.55 acres of paved parking a new building and approximately 0.96 acres of the new golf course layout. (See Developed Tributary Map Appendix B).

The area was analyzed by determining a weighted curve number of 86, using 0.92 acres with a curve number of 98 (Paved Parking, Roofs) and 1.63 acres with a curve

WATER QUALITY:

The site will provide water quality by storing enough volume for such as determined from the calculations provided in Appendix C. The volume required in the pond (3332 cf) established an elevation used to set the additional outlet devices discussed earlier for storm water quantity control.

Drawdown times of 48 hours and 16 hours were used to determine an orifice size. A 1” orifice was determined and was added to the routing of the pond as a part of the storm water control. The orifice was protected from sediment and silt buildup by installing a hooded snout with mesh bottom to help prevent clogging.

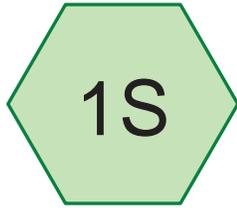
A forebay at the upper end of the pond is used to treat water from the proposed storm sewer from the parking lot along with a vegetative swale on the east side of the property which drains to the pond.. A micropool at the outlet of the pond is provided per Franklin County Standard Manual, Figure 3-2 (Extended Dry Detention Basin).

SUMMARY:

The post-developed peak flow rates for the proposed site are less than those of the existing condition as determined from the requirements of the Stormwater Drainage Manual.

In summary, the detention pond is designed to store enough storm water to achieve the required limited flow through the final outlet structure. Water quality has been provided (See Appendix C). Project is outside the flood plain of Marsh Run south of Dyer Road.

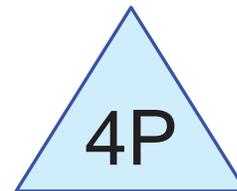
APPENDIX A
HydroCAD REPORT



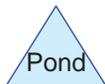
PreDeveloped



Developed



Pond



Kickmaster Golf WQv

Prepared by E.P. Ferris & Associates

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.850	79	50-75% Grass cover, Fair, HSG C (1S, 2S)
1.250	98	Paved parking, HSG C (1S, 2S)

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Type II 24-hr 1Yr. Rainfall=2.20"

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Page 3

Summary for Subcatchment 1S: PreDeveloped

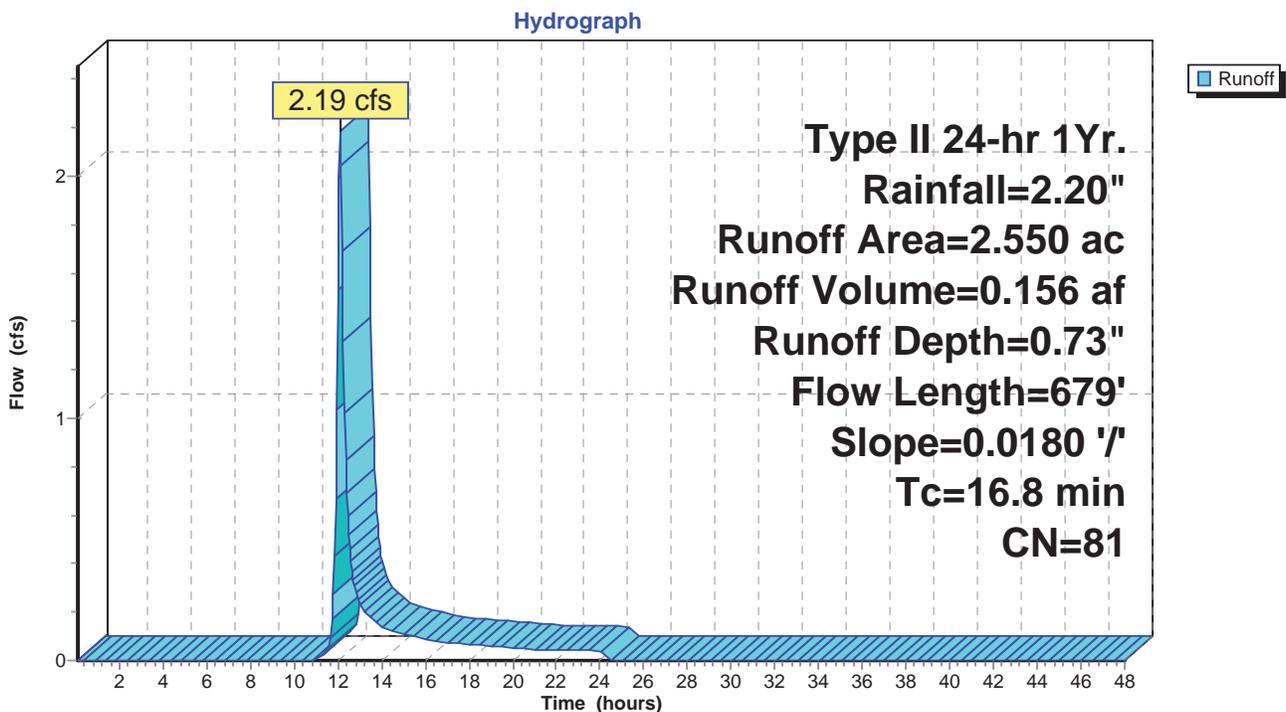
Runoff = 2.19 cfs @ 12.10 hrs, Volume= 0.156 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1Yr. Rainfall=2.20"

Area (ac)	CN	Description
0.330	98	Paved parking, HSG C
2.220	79	50-75% Grass cover, Fair, HSG C
2.550	81	Weighted Average
2.220		87.06% Pervious Area
0.330		12.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	679	0.0180	0.67		Lag/CN Method,

Subcatchment 1S: PreDeveloped



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Type II 24-hr 1Yr. Rainfall=2.20"

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Summary for Subcatchment 2S: Developed

Runoff = 4.29 cfs @ 11.99 hrs, Volume= 0.213 af, Depth= 1.00"

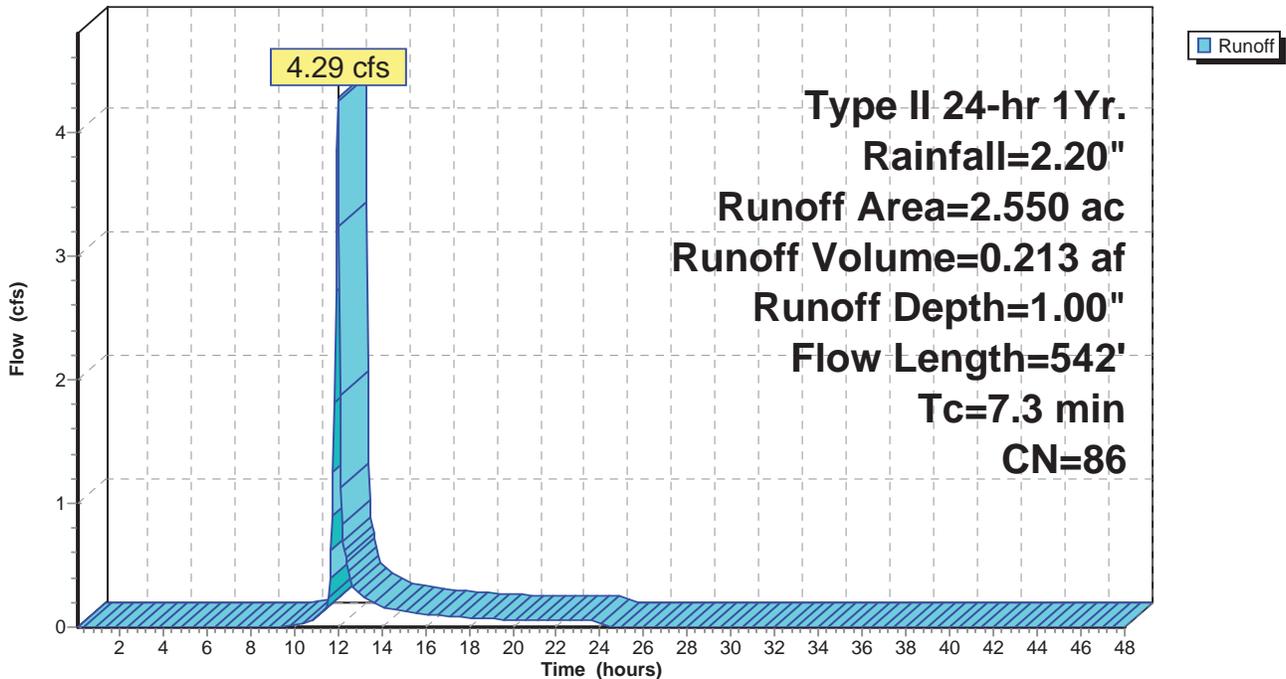
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 1Yr. Rainfall=2.20"

Area (ac)	CN	Description
0.920	98	Paved parking, HSG C
1.630	79	50-75% Grass cover, Fair, HSG C
2.550	86	Weighted Average
1.630		63.92% Pervious Area
0.920		36.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	200	0.0140	0.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
3.3	342	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
7.3	542	Total			

Subcatchment 2S: Developed

Hydrograph



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Type II 24-hr 1Yr. Rainfall=2.20"

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Summary for Pond 4P: Pond

Inflow Area = 2.550 ac, 36.08% Impervious, Inflow Depth = 1.00" for 1Yr. event
 Inflow = 4.29 cfs @ 11.99 hrs, Volume= 0.213 af
 Outflow = 0.50 cfs @ 12.43 hrs, Volume= 0.188 af, Atten= 88%, Lag= 26.2 min
 Primary = 0.04 cfs @ 12.43 hrs, Volume= 0.089 af
 Secondary = 0.46 cfs @ 12.43 hrs, Volume= 0.098 af
 Tertiary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 733.86' @ 12.43 hrs Surf.Area= 3,748 sf Storage= 4,425 cf

Plug-Flow detention time= 507.3 min calculated for 0.188 af (88% of inflow)
 Center-of-Mass det. time= 449.9 min (1,287.8 - 837.9)

Volume	Invert	Avail.Storage	Storage Description
#1	731.75'	16,575 cf	Custom Stage Data (Prismatic) Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
731.75	0	0	0
732.00	1,000	125	125
733.00	2,250	1,625	1,750
734.00	4,000	3,125	4,875
735.00	5,700	4,850	9,725
736.00	8,000	6,850	16,575

Device	Routing	Invert	Outlet Devices
#1	Primary	731.95'	1.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	733.50'	10.3" Vert. Orifice/Grate C= 0.600
#3	Tertiary	735.60'	4.2' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.04 cfs @ 12.43 hrs HW=733.86' (Free Discharge)

↑**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 6.57 fps)

Secondary OutFlow Max=0.46 cfs @ 12.43 hrs HW=733.86' (Free Discharge)

↑**2=Orifice/Grate** (Orifice Controls 0.46 cfs @ 2.03 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.10 hrs HW=731.75' (Free Discharge)

↑**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Kickmaster Golf WQv

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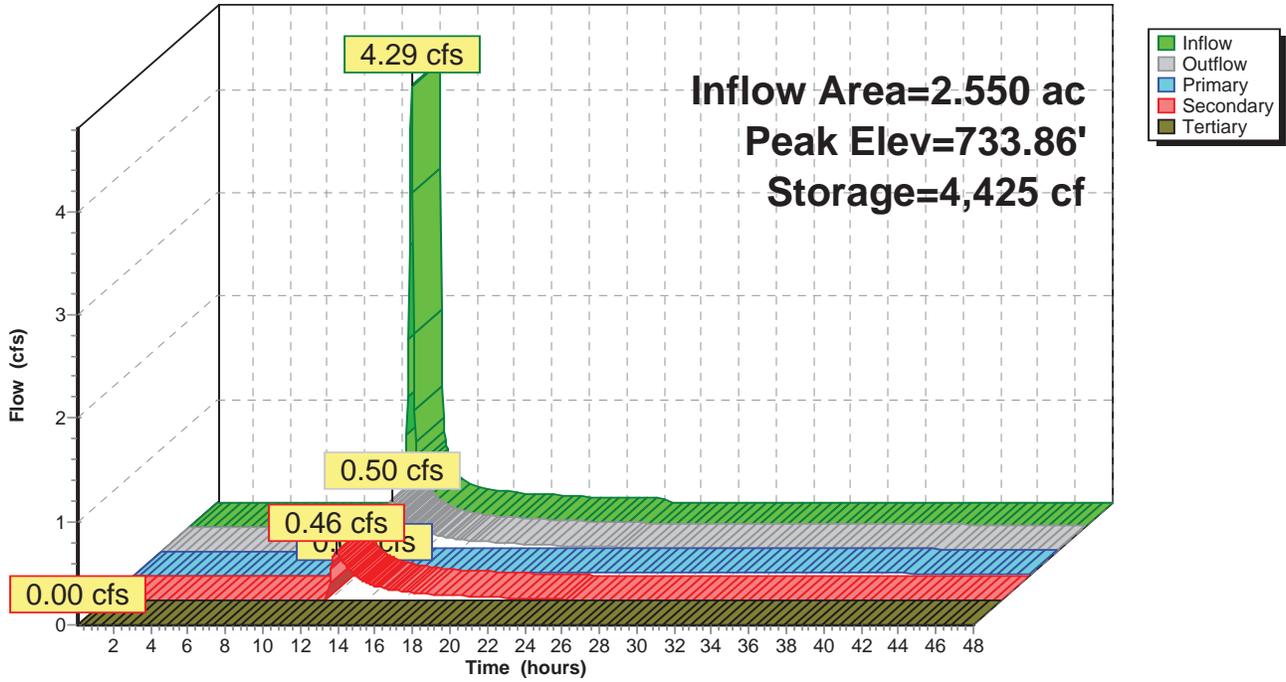
Type II 24-hr 1Yr. Rainfall=2.20"

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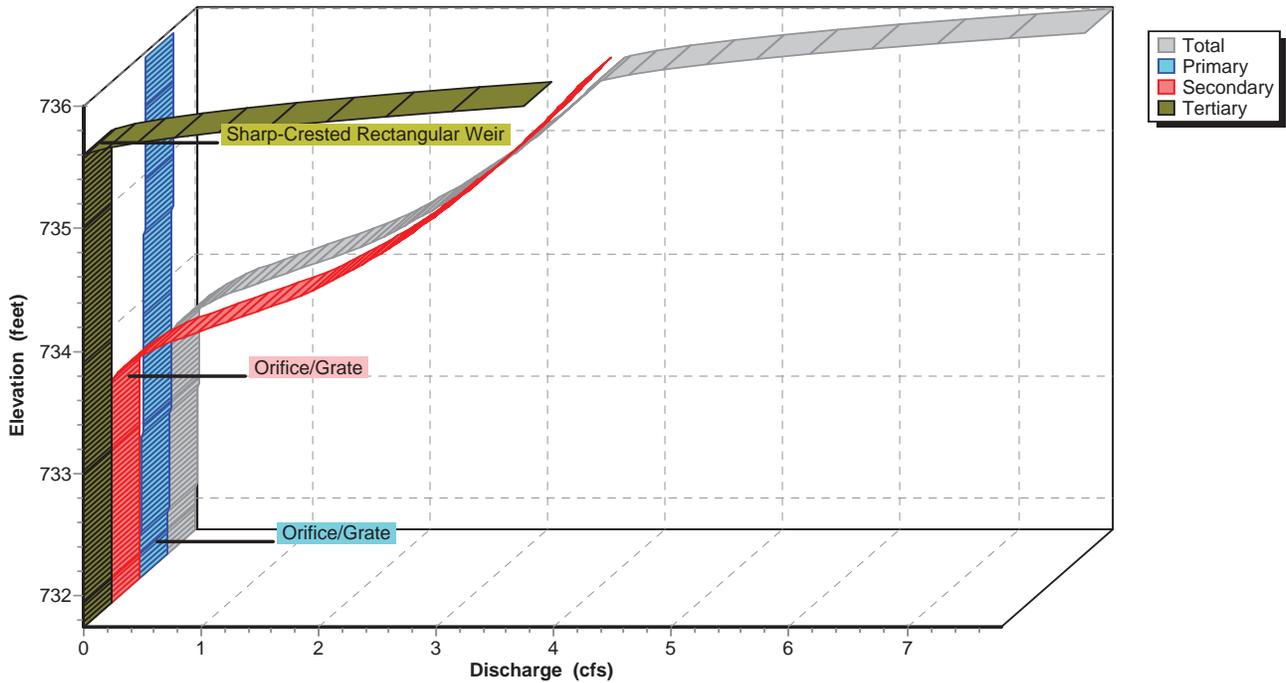
Pond 4P: Pond

Hydrograph



Pond 4P: Pond

Stage-Discharge



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Type II 24-hr 2Yr. Rainfall=2.63"

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Summary for Subcatchment 1S: PreDeveloped

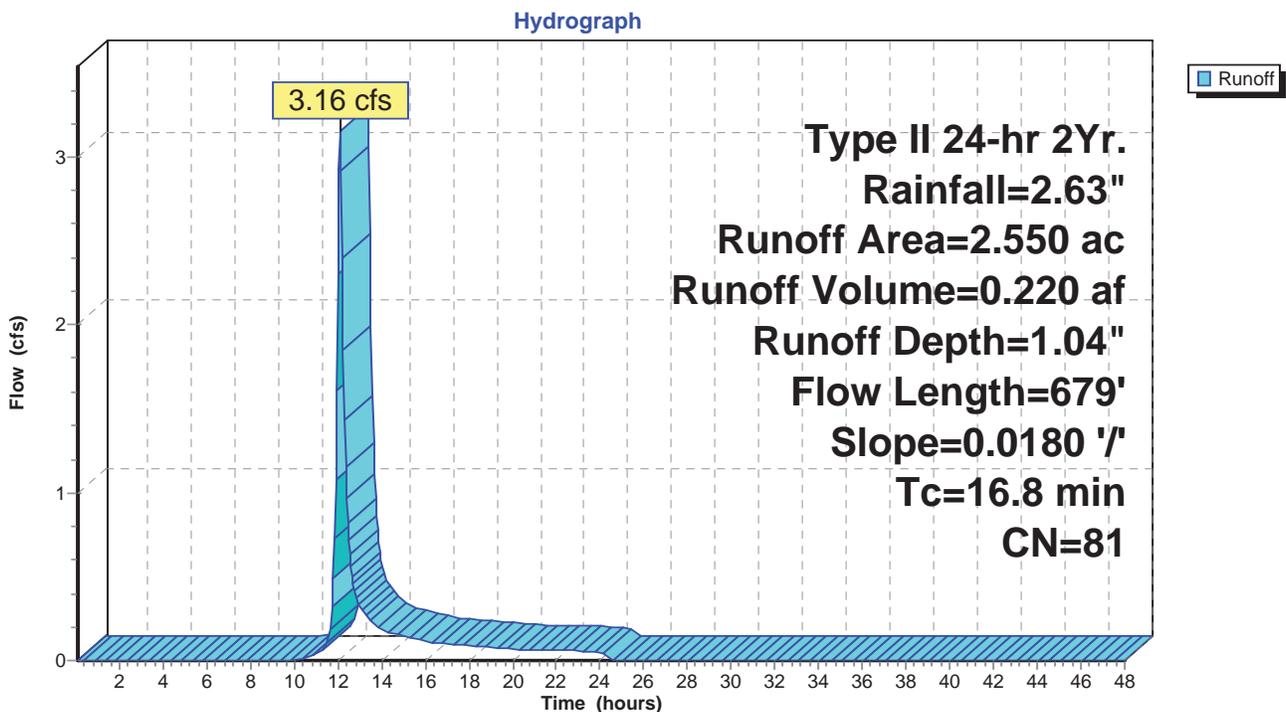
Runoff = 3.16 cfs @ 12.10 hrs, Volume= 0.220 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2Yr. Rainfall=2.63"

Area (ac)	CN	Description
0.330	98	Paved parking, HSG C
2.220	79	50-75% Grass cover, Fair, HSG C
2.550	81	Weighted Average
2.220		87.06% Pervious Area
0.330		12.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	679	0.0180	0.67		Lag/CN Method,

Subcatchment 1S: PreDeveloped



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Type II 24-hr 2Yr. Rainfall=2.63"

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Summary for Subcatchment 2S: Developed

Runoff = 5.76 cfs @ 11.99 hrs, Volume= 0.287 af, Depth= 1.35"

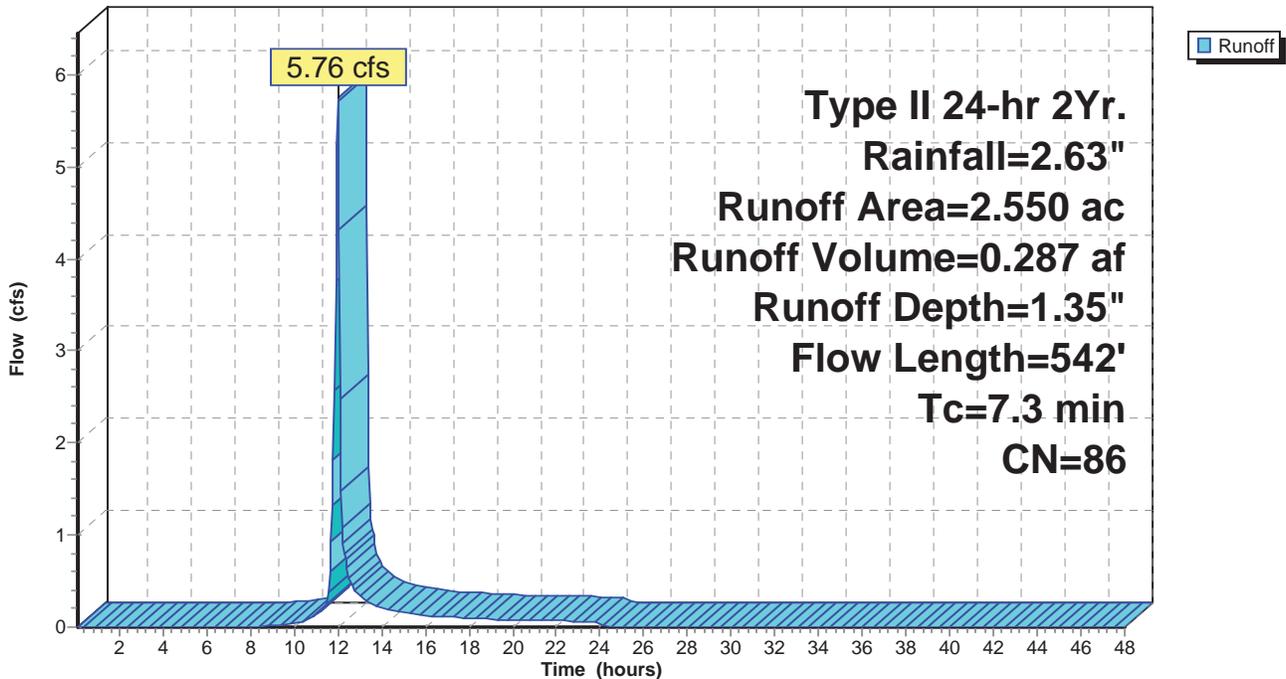
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 2Yr. Rainfall=2.63"

Area (ac)	CN	Description
0.920	98	Paved parking, HSG C
1.630	79	50-75% Grass cover, Fair, HSG C
2.550	86	Weighted Average
1.630		63.92% Pervious Area
0.920		36.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	200	0.0140	0.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
3.3	342	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
7.3	542	Total			

Subcatchment 2S: Developed

Hydrograph



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Type II 24-hr 2Yr. Rainfall=2.63"

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Summary for Pond 4P: Pond

Inflow Area = 2.550 ac, 36.08% Impervious, Inflow Depth = 1.35" for 2Yr. event
 Inflow = 5.76 cfs @ 11.99 hrs, Volume= 0.287 af
 Outflow = 1.27 cfs @ 12.18 hrs, Volume= 0.261 af, Atten= 78%, Lag= 11.4 min
 Primary = 0.04 cfs @ 12.18 hrs, Volume= 0.091 af
 Secondary = 1.23 cfs @ 12.18 hrs, Volume= 0.170 af
 Tertiary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 734.13' @ 12.18 hrs Surf.Area= 4,223 sf Storage= 5,510 cf

Plug-Flow detention time= 381.0 min calculated for 0.261 af (91% of inflow)
 Center-of-Mass det. time= 334.0 min (1,163.4 - 829.4)

Volume	Invert	Avail.Storage	Storage Description
#1	731.75'	16,575 cf	Custom Stage Data (Prismatic) Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
731.75	0	0	0
732.00	1,000	125	125
733.00	2,250	1,625	1,750
734.00	4,000	3,125	4,875
735.00	5,700	4,850	9,725
736.00	8,000	6,850	16,575

Device	Routing	Invert	Outlet Devices
#1	Primary	731.95'	1.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	733.50'	10.3" Vert. Orifice/Grate C= 0.600
#3	Tertiary	735.60'	4.2' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.04 cfs @ 12.18 hrs HW=734.13' (Free Discharge)
 ↑**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 7.04 fps)

Secondary OutFlow Max=1.23 cfs @ 12.18 hrs HW=734.13' (Free Discharge)
 ↑**2=Orifice/Grate** (Orifice Controls 1.23 cfs @ 2.70 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.10 hrs HW=731.75' (Free Discharge)
 ↑**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

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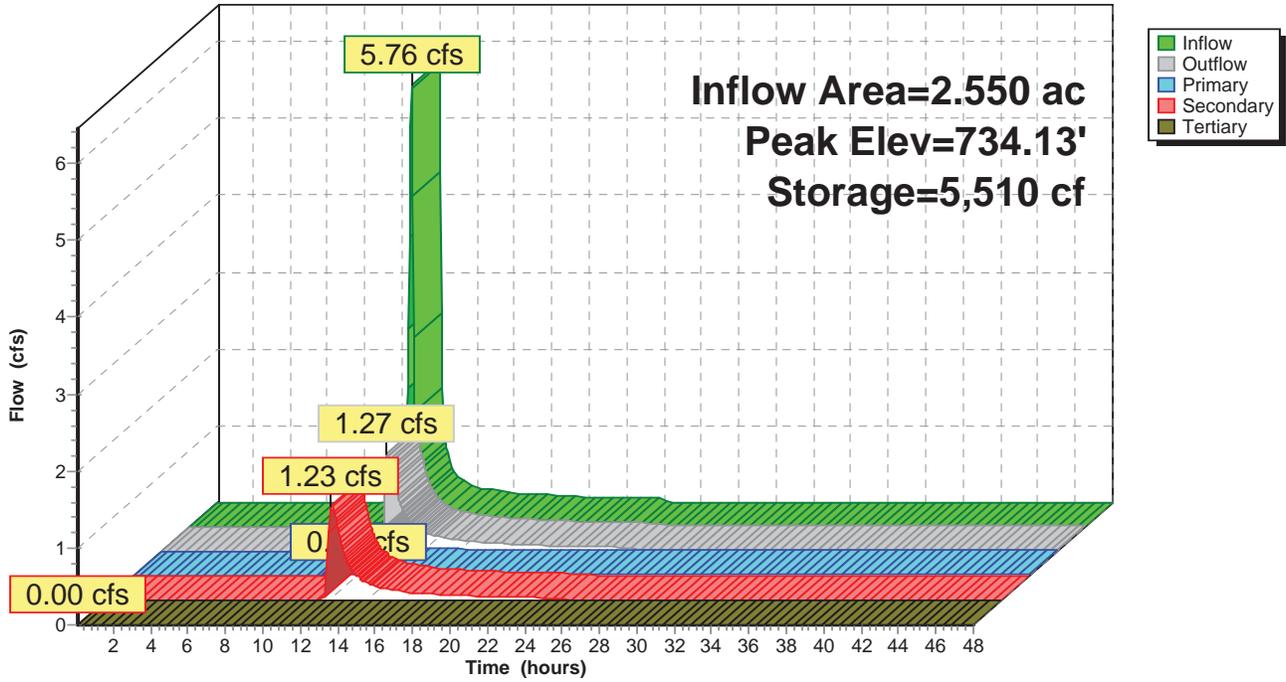
Type II 24-hr 2Yr. Rainfall=2.63"

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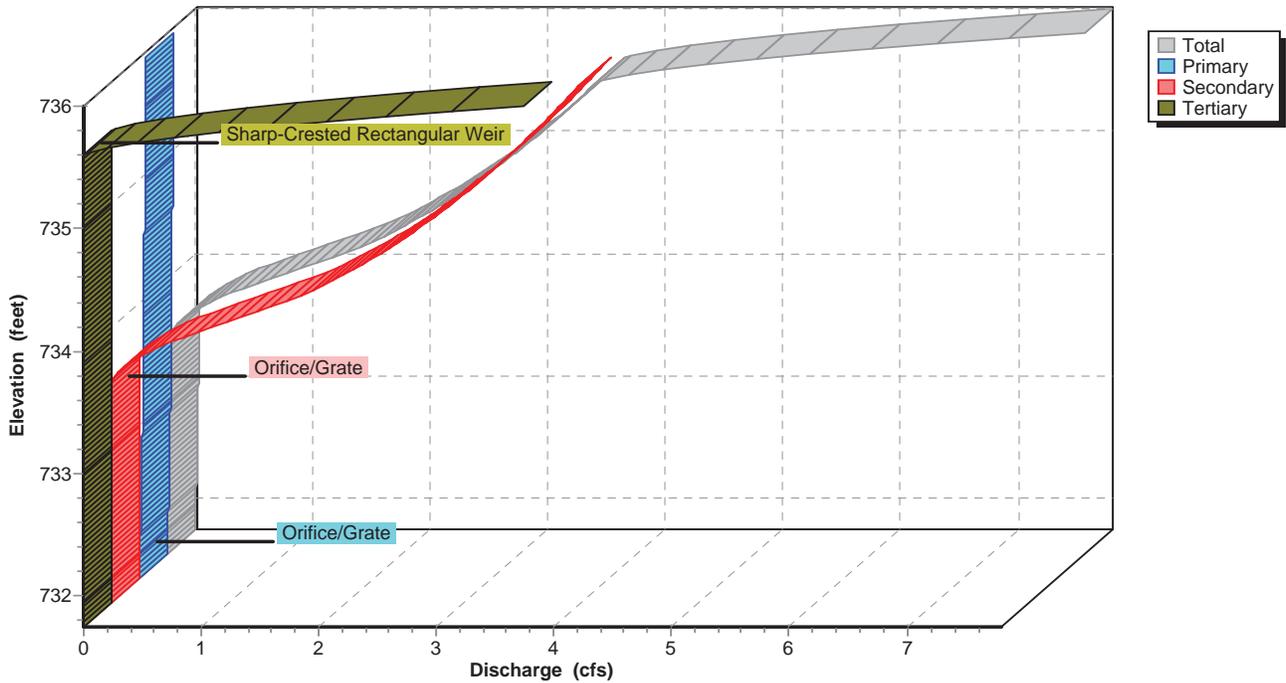
Pond 4P: Pond

Hydrograph



Pond 4P: Pond

Stage-Discharge



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Type II 24-hr 5Yr. Rainfall=3.24"

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Summary for Subcatchment 1S: PreDeveloped

Runoff = 4.64 cfs @ 12.10 hrs, Volume= 0.319 af, Depth= 1.50"

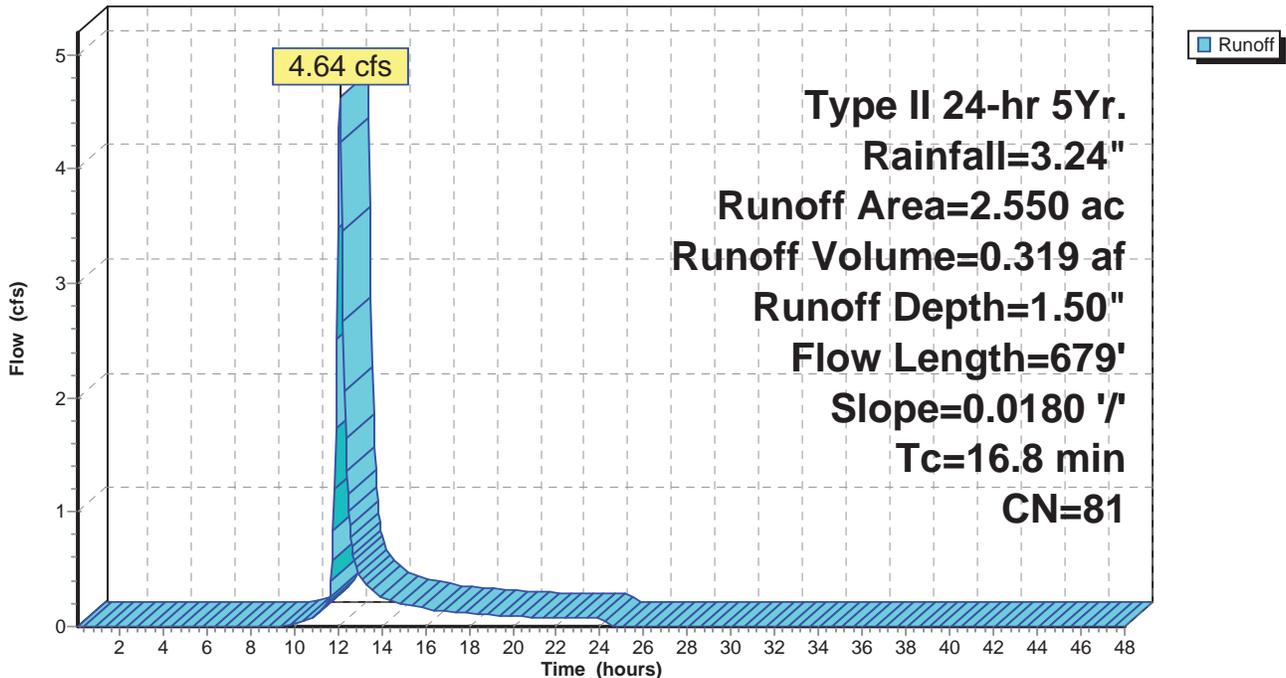
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5Yr. Rainfall=3.24"

Area (ac)	CN	Description
0.330	98	Paved parking, HSG C
2.220	79	50-75% Grass cover, Fair, HSG C
2.550	81	Weighted Average
2.220		87.06% Pervious Area
0.330		12.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	679	0.0180	0.67		Lag/CN Method,

Subcatchment 1S: PreDeveloped

Hydrograph



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Type II 24-hr 5Yr. Rainfall=3.24"

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Summary for Subcatchment 2S: Developed

Runoff = 7.91 cfs @ 11.99 hrs, Volume= 0.397 af, Depth= 1.87"

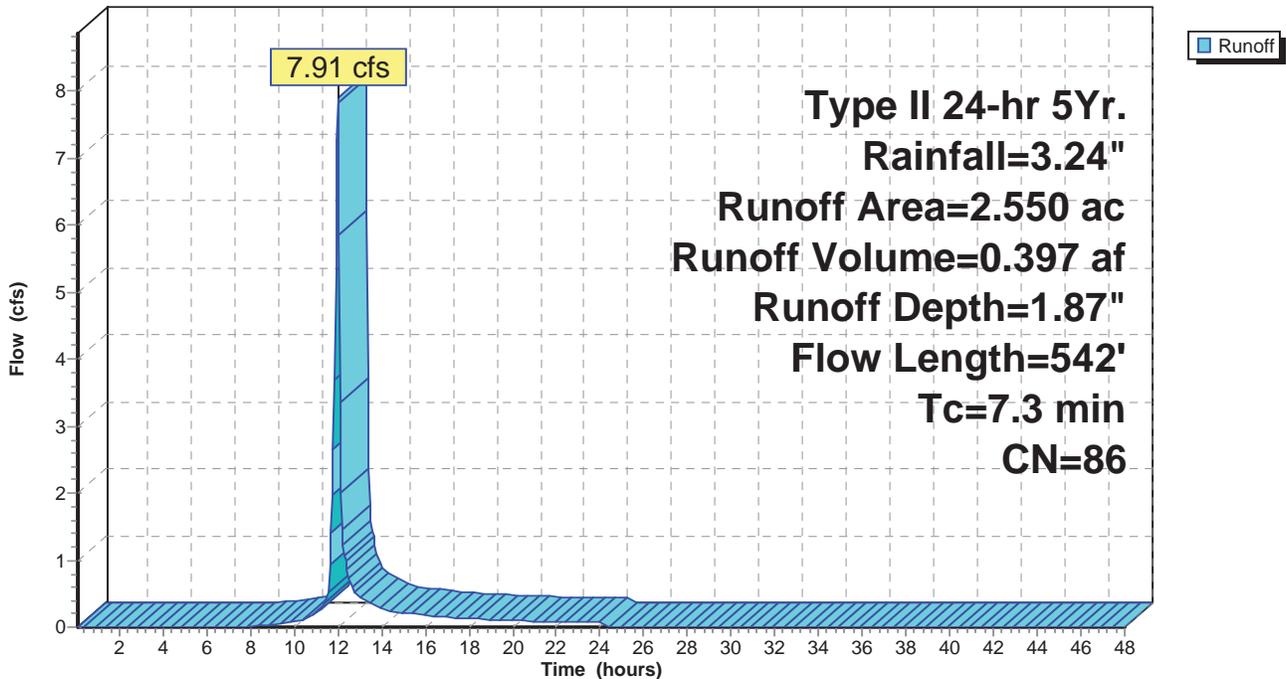
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 5Yr. Rainfall=3.24"

Area (ac)	CN	Description
0.920	98	Paved parking, HSG C
1.630	79	50-75% Grass cover, Fair, HSG C
2.550	86	Weighted Average
1.630		63.92% Pervious Area
0.920		36.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	200	0.0140	0.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
3.3	342	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
7.3	542	Total			

Subcatchment 2S: Developed

Hydrograph



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Type II 24-hr 5Yr. Rainfall=3.24"

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Summary for Pond 4P: Pond

Inflow Area = 2.550 ac, 36.08% Impervious, Inflow Depth = 1.87" for 5Yr. event
 Inflow = 7.91 cfs @ 11.99 hrs, Volume= 0.397 af
 Outflow = 2.19 cfs @ 12.15 hrs, Volume= 0.371 af, Atten= 72%, Lag= 9.9 min
 Primary = 0.04 cfs @ 12.15 hrs, Volume= 0.093 af
 Secondary = 2.15 cfs @ 12.15 hrs, Volume= 0.278 af
 Tertiary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 734.52' @ 12.15 hrs Surf.Area= 4,891 sf Storage= 7,416 cf

Plug-Flow detention time= 283.6 min calculated for 0.371 af (93% of inflow)
 Center-of-Mass det. time= 247.3 min (1,067.4 - 820.1)

Volume	Invert	Avail.Storage	Storage Description
#1	731.75'	16,575 cf	Custom Stage Data (Prismatic) Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
731.75	0	0	0
732.00	1,000	125	125
733.00	2,250	1,625	1,750
734.00	4,000	3,125	4,875
735.00	5,700	4,850	9,725
736.00	8,000	6,850	16,575

Device	Routing	Invert	Outlet Devices
#1	Primary	731.95'	1.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	733.50'	10.3" Vert. Orifice/Grate C= 0.600
#3	Tertiary	735.60'	4.2' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.04 cfs @ 12.15 hrs HW=734.52' (Free Discharge)
 ↑**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 7.66 fps)

Secondary OutFlow Max=2.15 cfs @ 12.15 hrs HW=734.52' (Free Discharge)
 ↑**2=Orifice/Grate** (Orifice Controls 2.15 cfs @ 3.71 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.10 hrs HW=731.75' (Free Discharge)
 ↑**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Kickmaster Golf WQv

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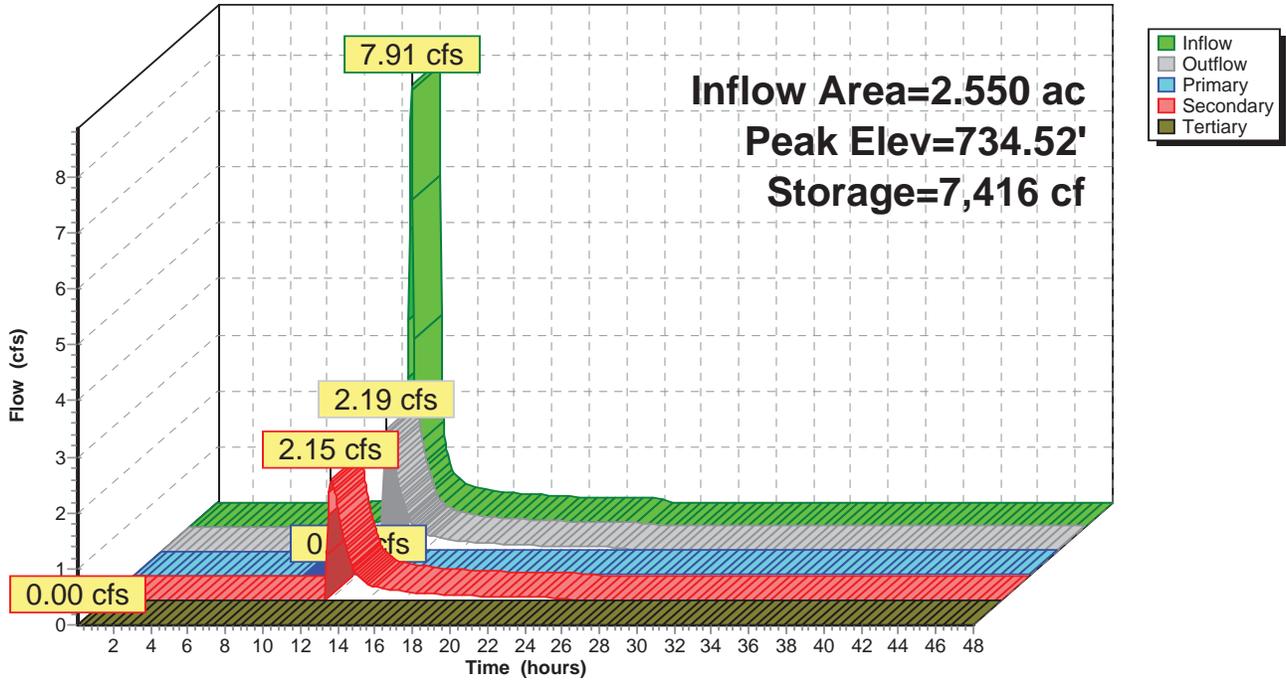
Type II 24-hr 5Yr. Rainfall=3.24"

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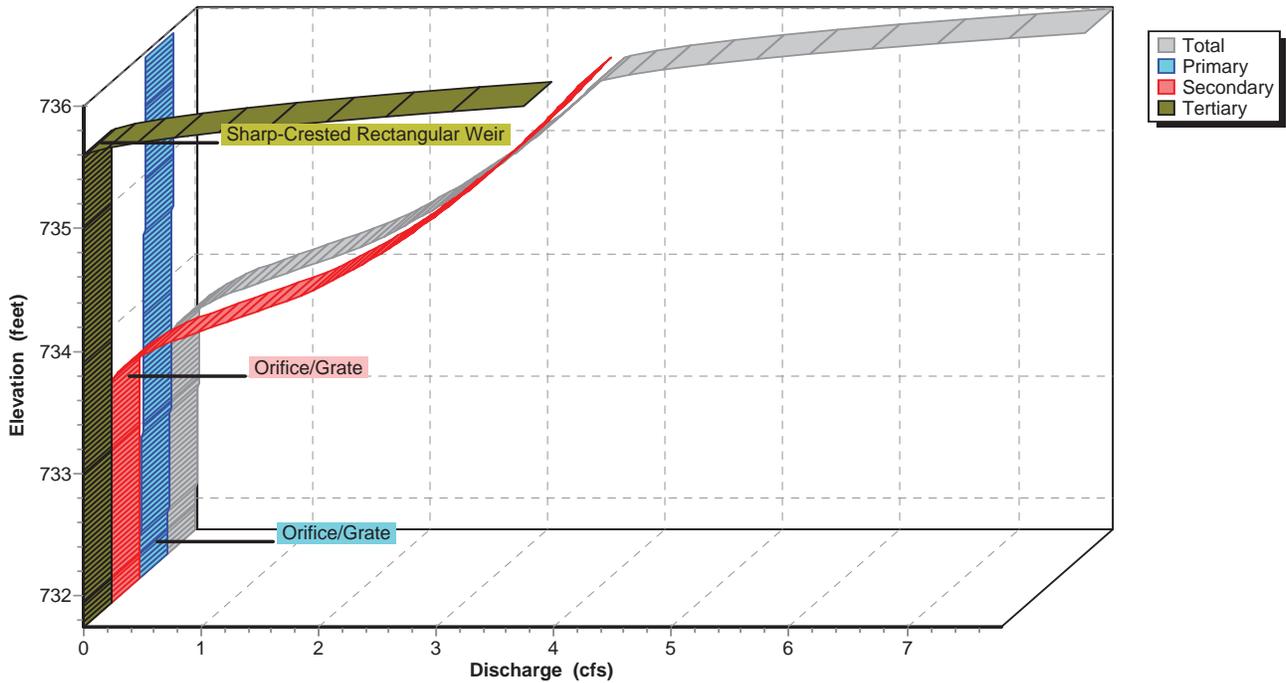
Pond 4P: Pond

Hydrograph



Pond 4P: Pond

Stage-Discharge



Kickmaster Golf WQv

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Type II 24-hr 10Yr. Rainfall=3.74"

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Summary for Subcatchment 1S: PreDeveloped

Runoff = 5.90 cfs @ 12.09 hrs, Volume= 0.405 af, Depth= 1.90"

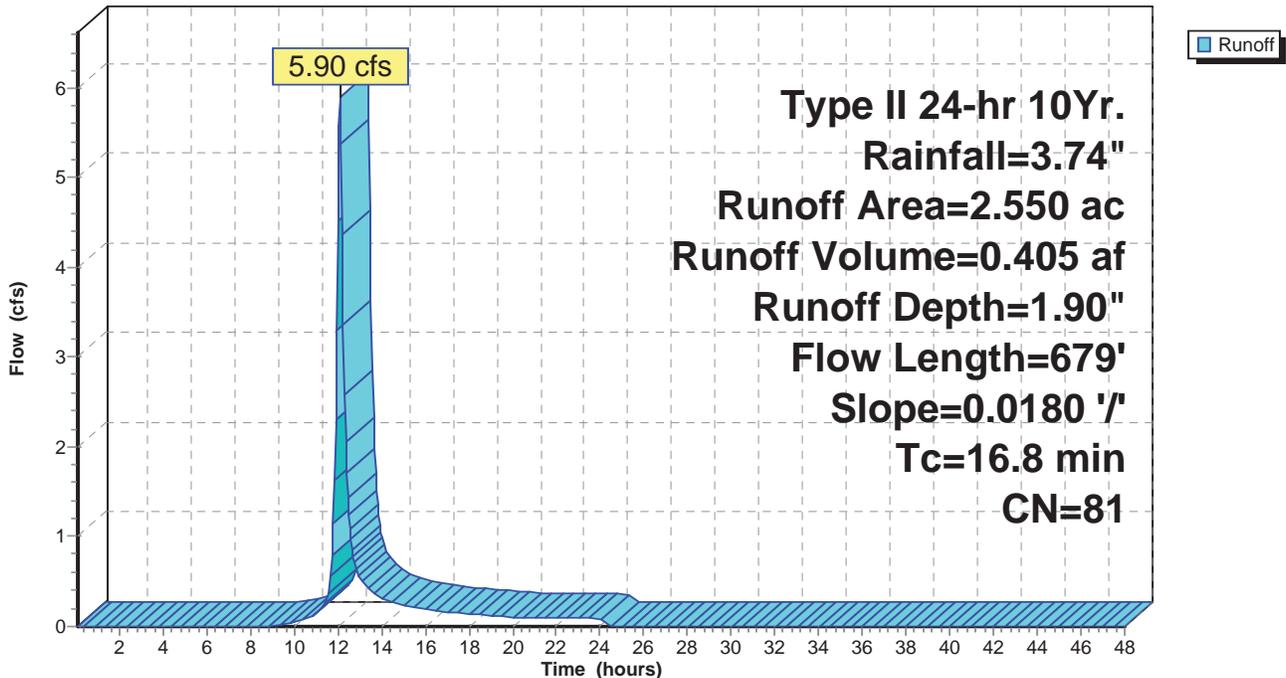
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10Yr. Rainfall=3.74"

Area (ac)	CN	Description
0.330	98	Paved parking, HSG C
2.220	79	50-75% Grass cover, Fair, HSG C
2.550	81	Weighted Average
2.220		87.06% Pervious Area
0.330		12.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	679	0.0180	0.67		Lag/CN Method,

Subcatchment 1S: PreDeveloped

Hydrograph



Kickmaster Golf WQv

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Type II 24-hr 10Yr. Rainfall=3.74"

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Summary for Subcatchment 2S: Developed

Runoff = 9.71 cfs @ 11.99 hrs, Volume= 0.491 af, Depth= 2.31"

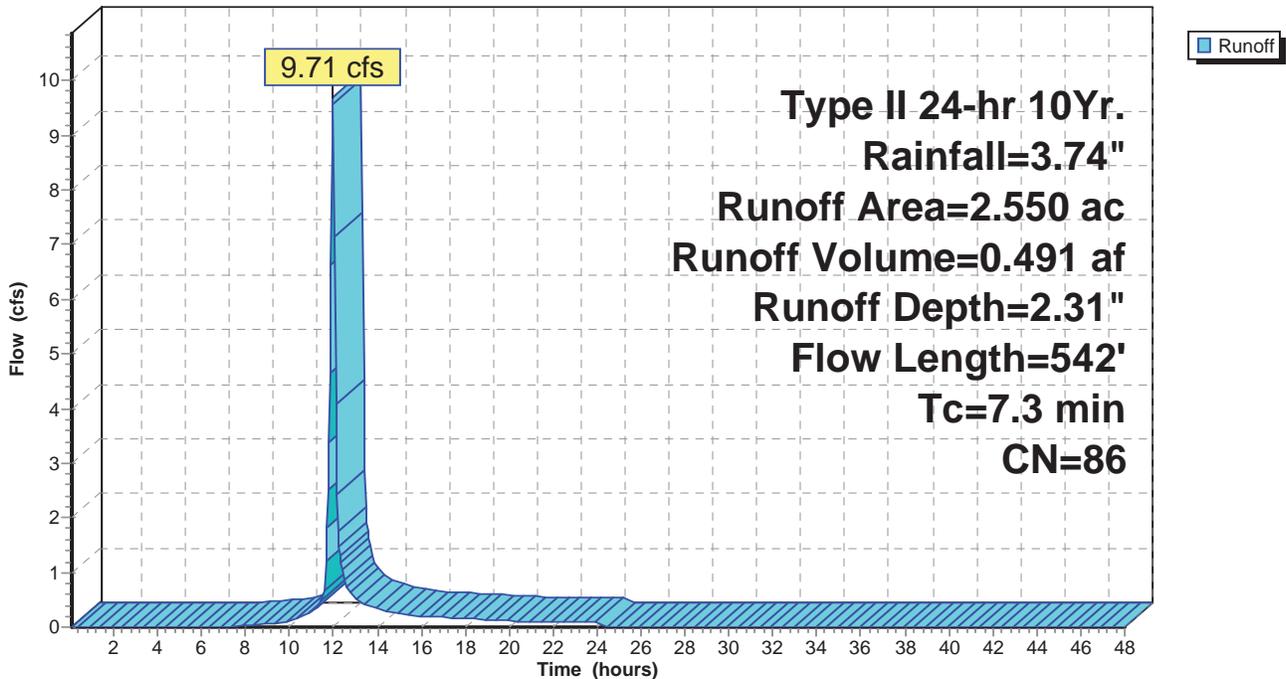
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 10Yr. Rainfall=3.74"

Area (ac)	CN	Description
0.920	98	Paved parking, HSG C
1.630	79	50-75% Grass cover, Fair, HSG C
2.550	86	Weighted Average
1.630		63.92% Pervious Area
0.920		36.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	200	0.0140	0.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
3.3	342	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
7.3	542	Total			

Subcatchment 2S: Developed

Hydrograph



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Type II 24-hr 10Yr. Rainfall=3.74"

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Summary for Pond 4P: Pond

Inflow Area = 2.550 ac, 36.08% Impervious, Inflow Depth = 2.31" for 10Yr. event
 Inflow = 9.71 cfs @ 11.99 hrs, Volume= 0.491 af
 Outflow = 2.75 cfs @ 12.15 hrs, Volume= 0.465 af, Atten= 72%, Lag= 9.7 min
 Primary = 0.04 cfs @ 12.15 hrs, Volume= 0.095 af
 Secondary = 2.71 cfs @ 12.15 hrs, Volume= 0.370 af
 Tertiary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 734.87' @ 12.15 hrs Surf.Area= 5,487 sf Storage= 9,118 cf

Plug-Flow detention time= 237.5 min calculated for 0.465 af (95% of inflow)
 Center-of-Mass det. time= 206.9 min (1,021.0 - 814.1)

Volume	Invert	Avail.Storage	Storage Description
#1	731.75'	16,575 cf	Custom Stage Data (Prismatic) Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
731.75	0	0	0
732.00	1,000	125	125
733.00	2,250	1,625	1,750
734.00	4,000	3,125	4,875
735.00	5,700	4,850	9,725
736.00	8,000	6,850	16,575

Device	Routing	Invert	Outlet Devices
#1	Primary	731.95'	1.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	733.50'	10.3" Vert. Orifice/Grate C= 0.600
#3	Tertiary	735.60'	4.2' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.04 cfs @ 12.15 hrs HW=734.87' (Free Discharge)

↑**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 8.17 fps)

Secondary OutFlow Max=2.71 cfs @ 12.15 hrs HW=734.87' (Free Discharge)

↑**2=Orifice/Grate** (Orifice Controls 2.71 cfs @ 4.68 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.10 hrs HW=731.75' (Free Discharge)

↑**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

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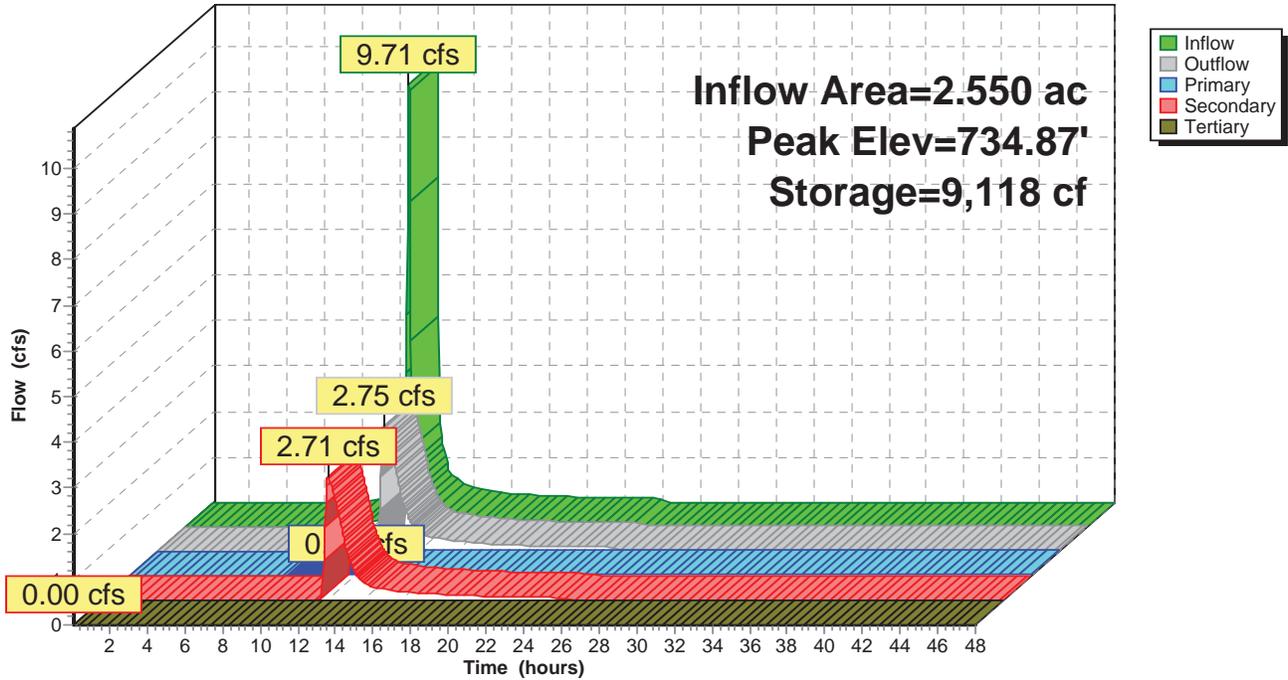
Type II 24-hr 10Yr. Rainfall=3.74"

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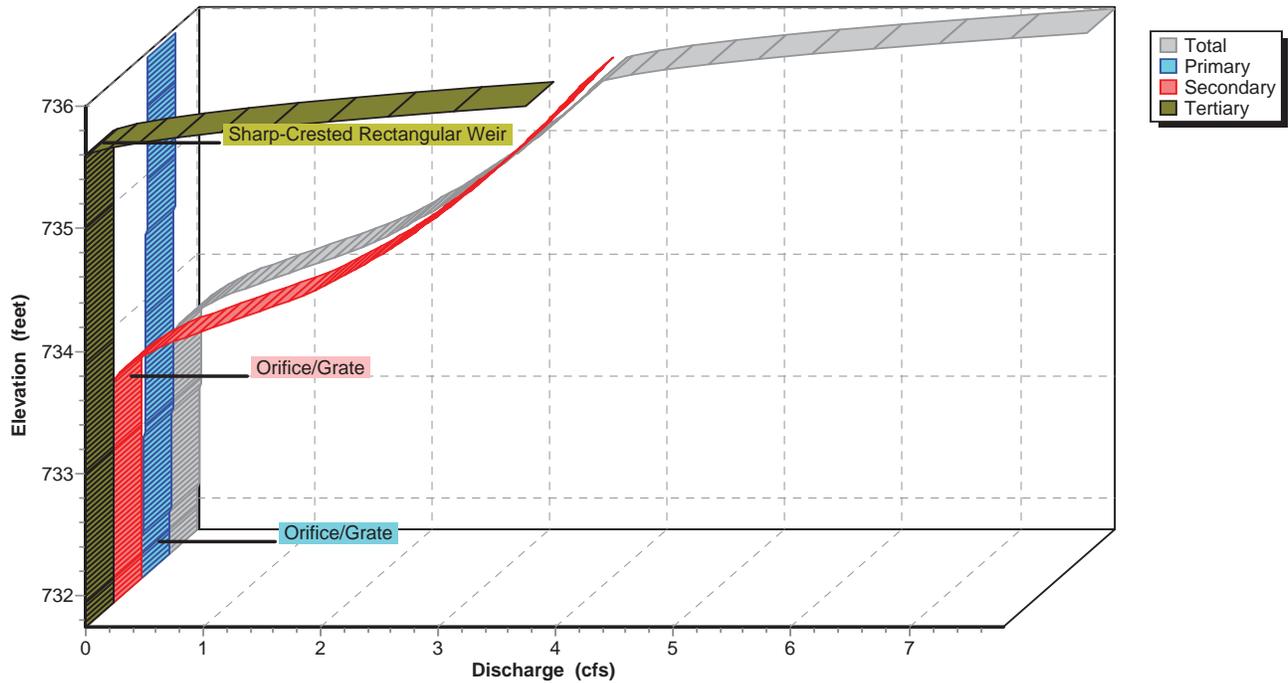
Pond 4P: Pond

Hydrograph



Pond 4P: Pond

Stage-Discharge



Kickmaster Golf WQv

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Type II 24-hr 25Yr. Rainfall=4.44"

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Summary for Subcatchment 1S: PreDeveloped

Runoff = 7.74 cfs @ 12.09 hrs, Volume= 0.530 af, Depth= 2.50"

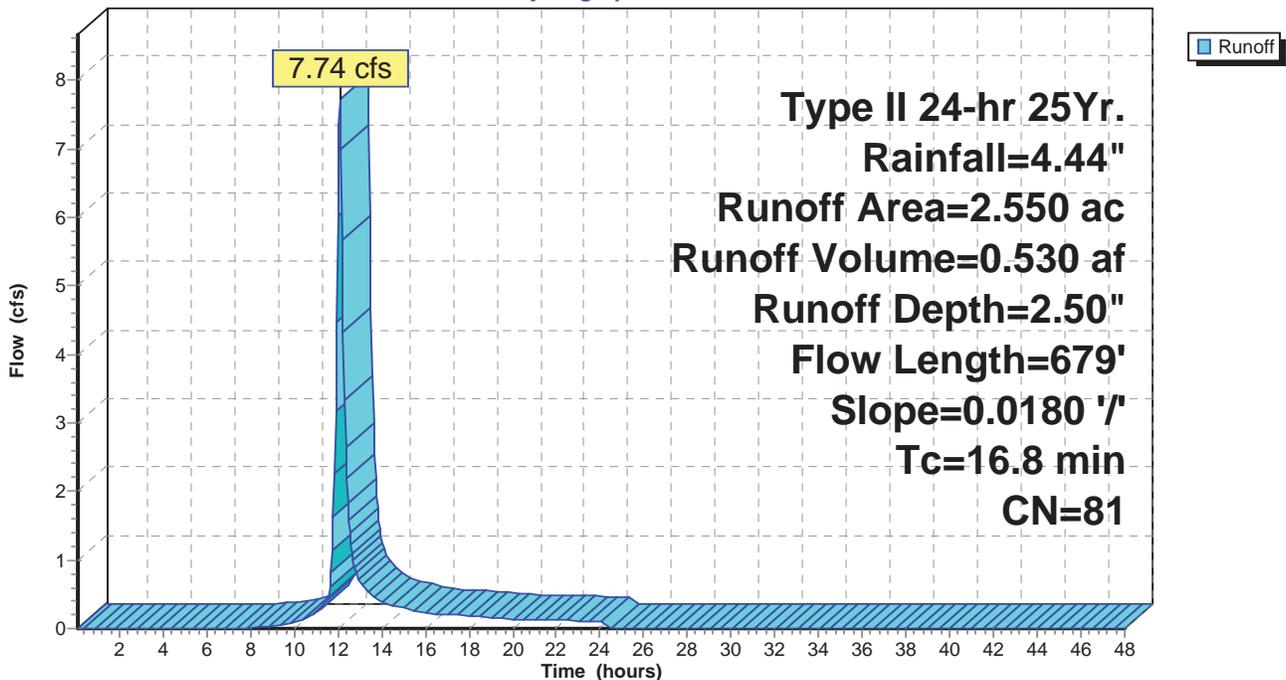
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25Yr. Rainfall=4.44"

Area (ac)	CN	Description
0.330	98	Paved parking, HSG C
2.220	79	50-75% Grass cover, Fair, HSG C
2.550	81	Weighted Average
2.220		87.06% Pervious Area
0.330		12.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	679	0.0180	0.67		Lag/CN Method,

Subcatchment 1S: PreDeveloped

Hydrograph



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Type II 24-hr 25Yr. Rainfall=4.44"

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Summary for Subcatchment 2S: Developed

Runoff = 12.25 cfs @ 11.98 hrs, Volume= 0.626 af, Depth= 2.95"

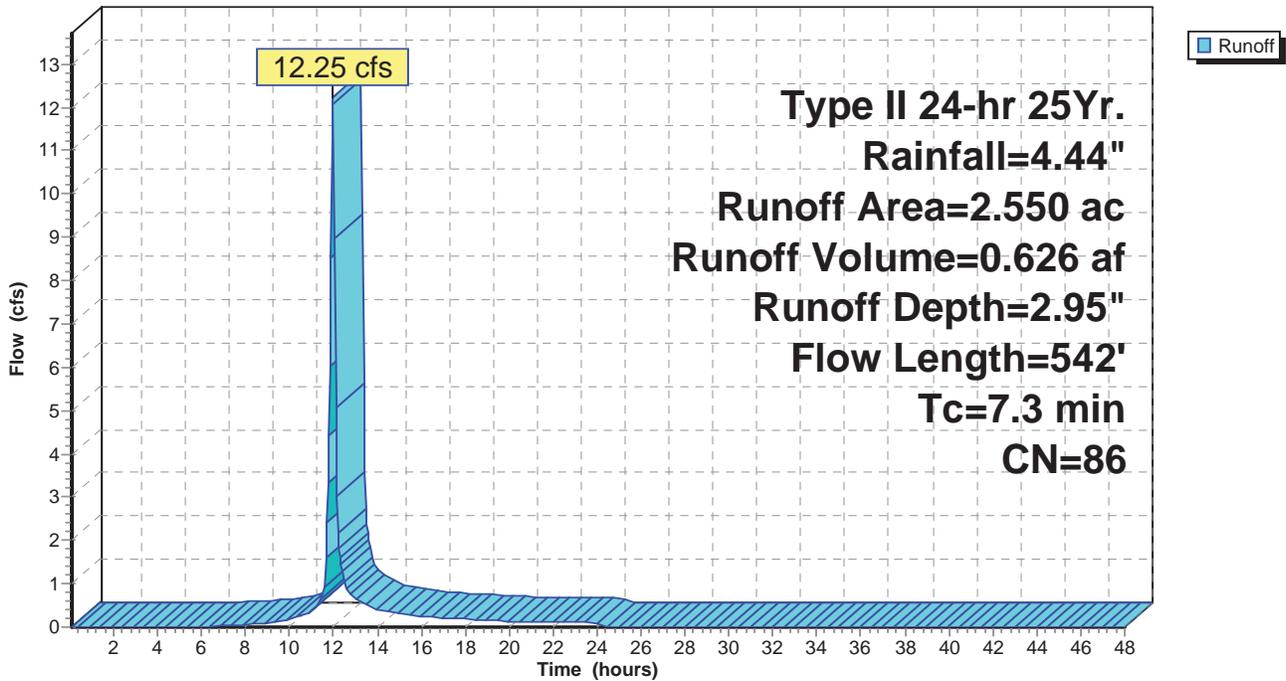
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25Yr. Rainfall=4.44"

Area (ac)	CN	Description
0.920	98	Paved parking, HSG C
1.630	79	50-75% Grass cover, Fair, HSG C
2.550	86	Weighted Average
1.630		63.92% Pervious Area
0.920		36.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	200	0.0140	0.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
3.3	342	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
7.3	542	Total			

Subcatchment 2S: Developed

Hydrograph



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Type II 24-hr 25Yr. Rainfall=4.44"

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Summary for Pond 4P: Pond

Inflow Area = 2.550 ac, 36.08% Impervious, Inflow Depth = 2.95" for 25Yr. event
 Inflow = 12.25 cfs @ 11.98 hrs, Volume= 0.626 af
 Outflow = 3.29 cfs @ 12.15 hrs, Volume= 0.600 af, Atten= 73%, Lag= 10.0 min
 Primary = 0.05 cfs @ 12.15 hrs, Volume= 0.098 af
 Secondary = 3.24 cfs @ 12.15 hrs, Volume= 0.502 af
 Tertiary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 735.28' @ 12.15 hrs Surf.Area= 6,347 sf Storage= 11,651 cf

Plug-Flow detention time= 196.3 min calculated for 0.599 af (96% of inflow)
 Center-of-Mass det. time= 172.7 min (979.8 - 807.1)

Volume	Invert	Avail.Storage	Storage Description
#1	731.75'	16,575 cf	Custom Stage Data (Prismatic) Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
731.75	0	0	0
732.00	1,000	125	125
733.00	2,250	1,625	1,750
734.00	4,000	3,125	4,875
735.00	5,700	4,850	9,725
736.00	8,000	6,850	16,575

Device	Routing	Invert	Outlet Devices
#1	Primary	731.95'	1.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	733.50'	10.3" Vert. Orifice/Grate C= 0.600
#3	Tertiary	735.60'	4.2' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.05 cfs @ 12.15 hrs HW=735.28' (Free Discharge)
 ↑**1=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.73 fps)

Secondary OutFlow Max=3.24 cfs @ 12.15 hrs HW=735.28' (Free Discharge)
 ↑**2=Orifice/Grate** (Orifice Controls 3.24 cfs @ 5.60 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.10 hrs HW=731.75' (Free Discharge)
 ↑**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Kickmaster Golf WQv

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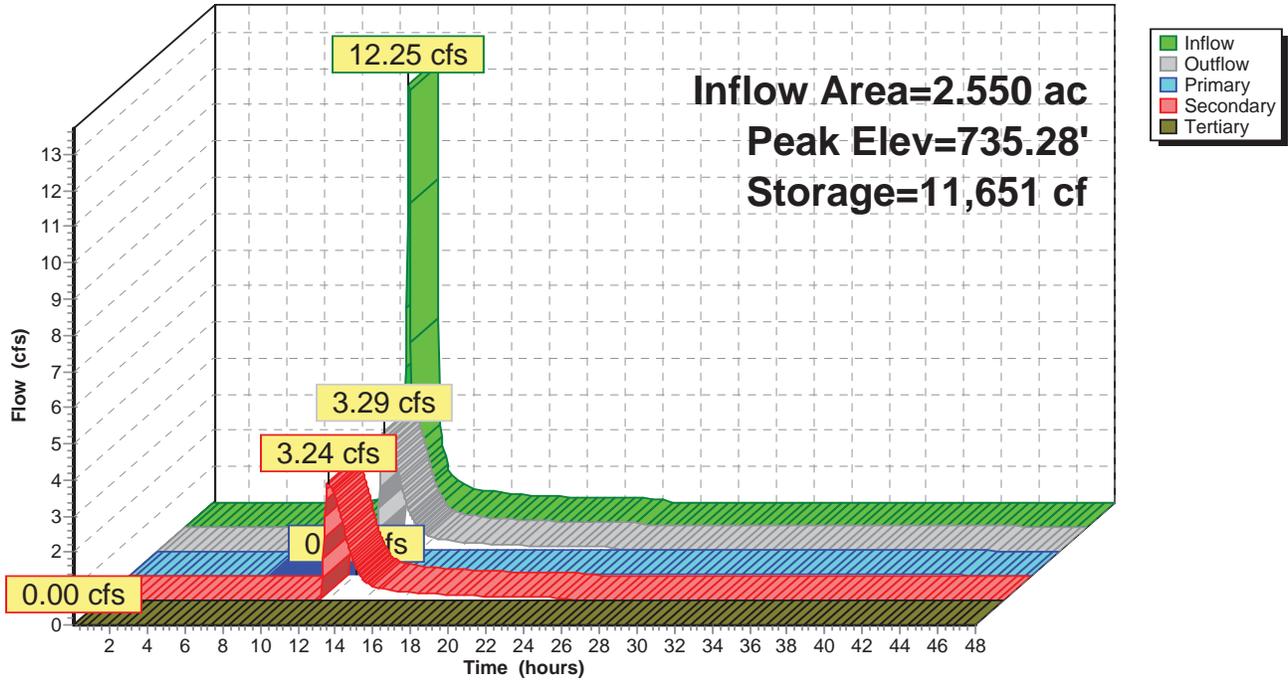
Type II 24-hr 25Yr. Rainfall=4.44"

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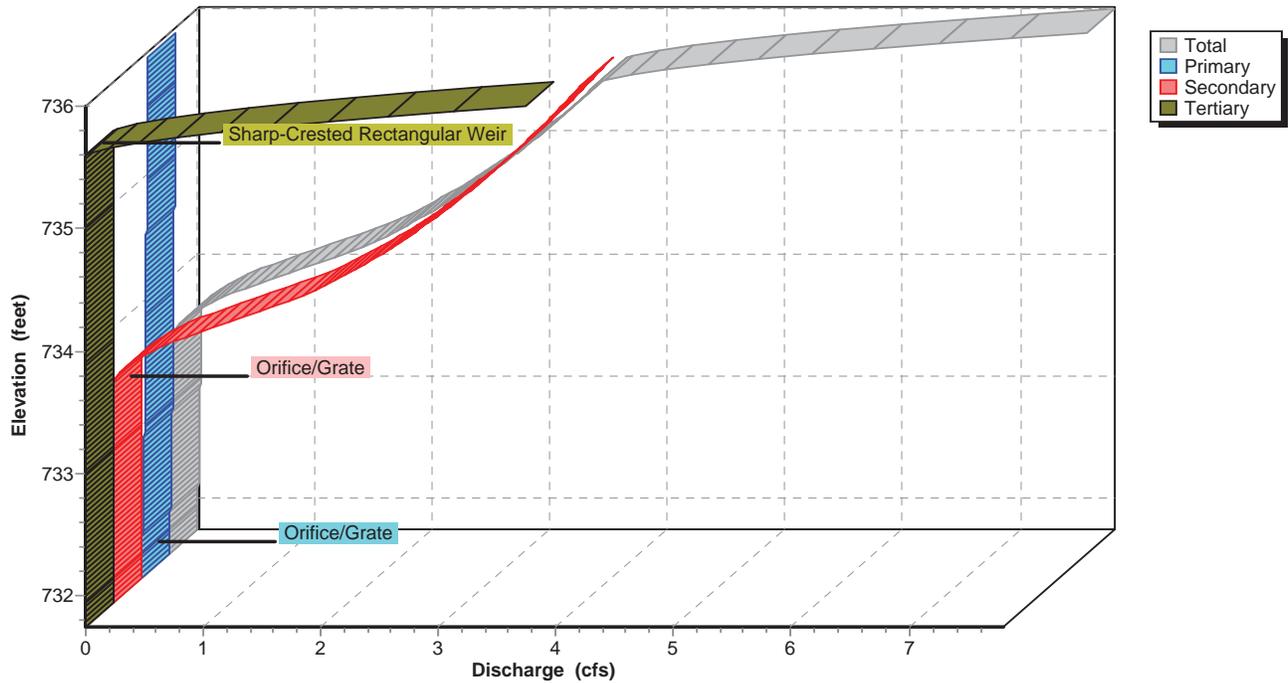
Pond 4P: Pond

Hydrograph



Pond 4P: Pond

Stage-Discharge



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Type II 24-hr 50Yr. Rainfall=5.02"

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Summary for Subcatchment 1S: PreDeveloped

Runoff = 9.29 cfs @ 12.09 hrs, Volume= 0.638 af, Depth= 3.00"

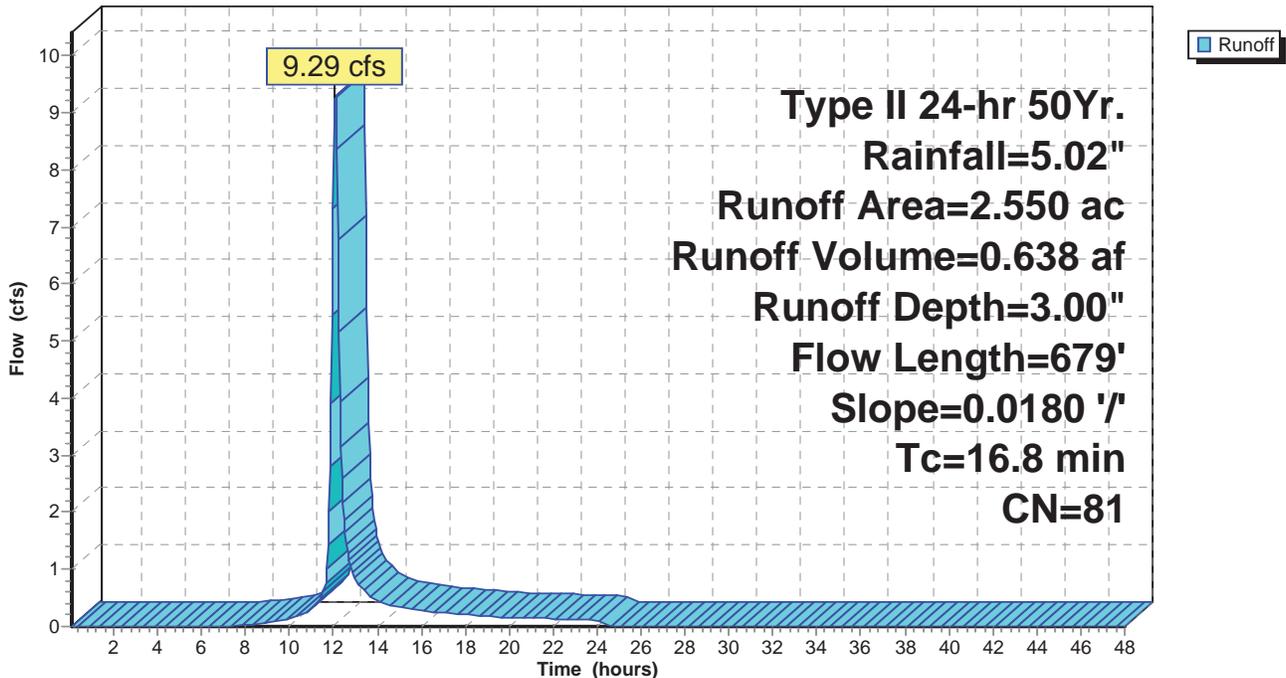
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 50Yr. Rainfall=5.02"

Area (ac)	CN	Description
0.330	98	Paved parking, HSG C
2.220	79	50-75% Grass cover, Fair, HSG C
2.550	81	Weighted Average
2.220		87.06% Pervious Area
0.330		12.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	679	0.0180	0.67		Lag/CN Method,

Subcatchment 1S: PreDeveloped

Hydrograph



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Type II 24-hr 50Yr. Rainfall=5.02"

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Summary for Subcatchment 2S: Developed

Runoff = 14.35 cfs @ 11.98 hrs, Volume= 0.741 af, Depth= 3.49"

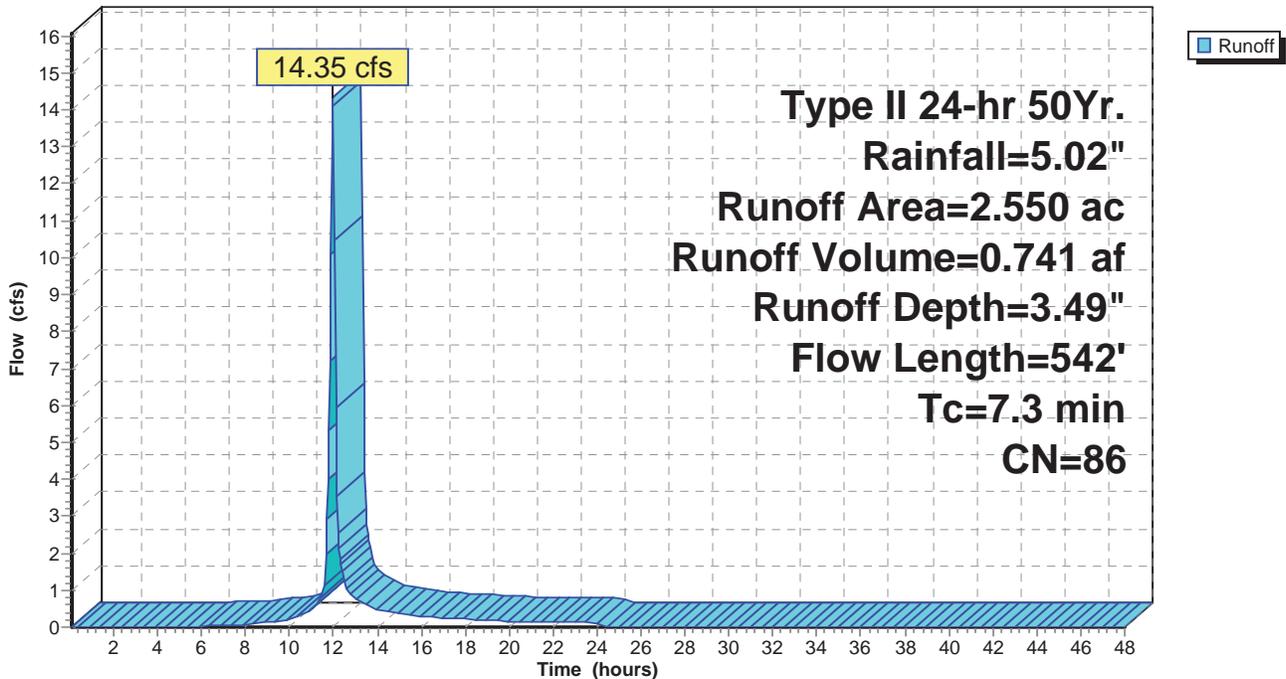
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 50Yr. Rainfall=5.02"

Area (ac)	CN	Description
0.920	98	Paved parking, HSG C
1.630	79	50-75% Grass cover, Fair, HSG C
2.550	86	Weighted Average
1.630		63.92% Pervious Area
0.920		36.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	200	0.0140	0.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
3.3	342	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
7.3	542	Total			

Subcatchment 2S: Developed

Hydrograph



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Type II 24-hr 50Yr. Rainfall=5.02"

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Summary for Pond 4P: Pond

Inflow Area = 2.550 ac, 36.08% Impervious, Inflow Depth = 3.49" for 50Yr. event
 Inflow = 14.35 cfs @ 11.98 hrs, Volume= 0.741 af
 Outflow = 3.65 cfs @ 12.16 hrs, Volume= 0.714 af, Atten= 75%, Lag= 10.4 min
 Primary = 0.05 cfs @ 12.16 hrs, Volume= 0.100 af
 Secondary = 3.60 cfs @ 12.16 hrs, Volume= 0.614 af
 Tertiary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 735.60' @ 12.16 hrs Surf.Area= 7,073 sf Storage= 13,813 cf

Plug-Flow detention time= 175.1 min calculated for 0.713 af (96% of inflow)
 Center-of-Mass det. time= 154.9 min (957.3 - 802.4)

Volume	Invert	Avail.Storage	Storage Description
#1	731.75'	16,575 cf	Custom Stage Data (Prismatic) Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
731.75	0	0	0
732.00	1,000	125	125
733.00	2,250	1,625	1,750
734.00	4,000	3,125	4,875
735.00	5,700	4,850	9,725
736.00	8,000	6,850	16,575

Device	Routing	Invert	Outlet Devices
#1	Primary	731.95'	1.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	733.50'	10.3" Vert. Orifice/Grate C= 0.600
#3	Tertiary	735.60'	4.2' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.05 cfs @ 12.16 hrs HW=735.59' (Free Discharge)
 ↑1=Orifice/Grate (Orifice Controls 0.05 cfs @ 9.14 fps)

Secondary OutFlow Max=3.60 cfs @ 12.16 hrs HW=735.59' (Free Discharge)
 ↑2=Orifice/Grate (Orifice Controls 3.60 cfs @ 6.21 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.10 hrs HW=731.75' (Free Discharge)
 ↑3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Kickmaster Golf WQv

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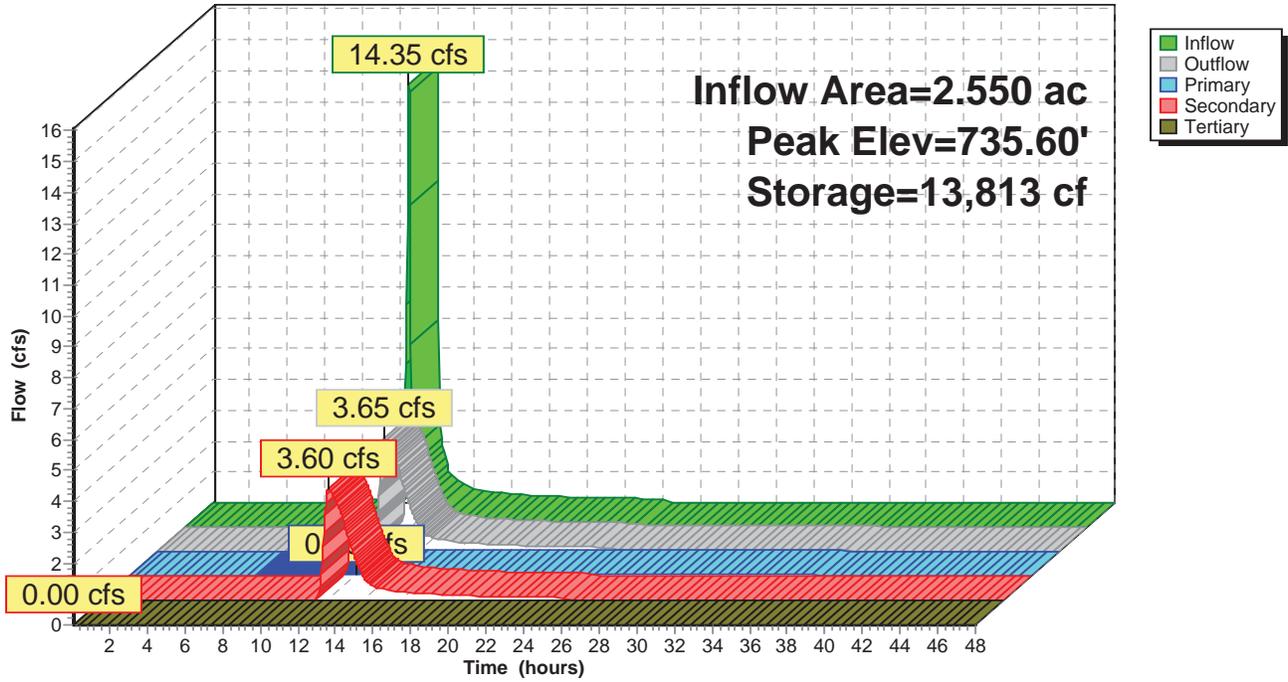
Type II 24-hr 50Yr. Rainfall=5.02"

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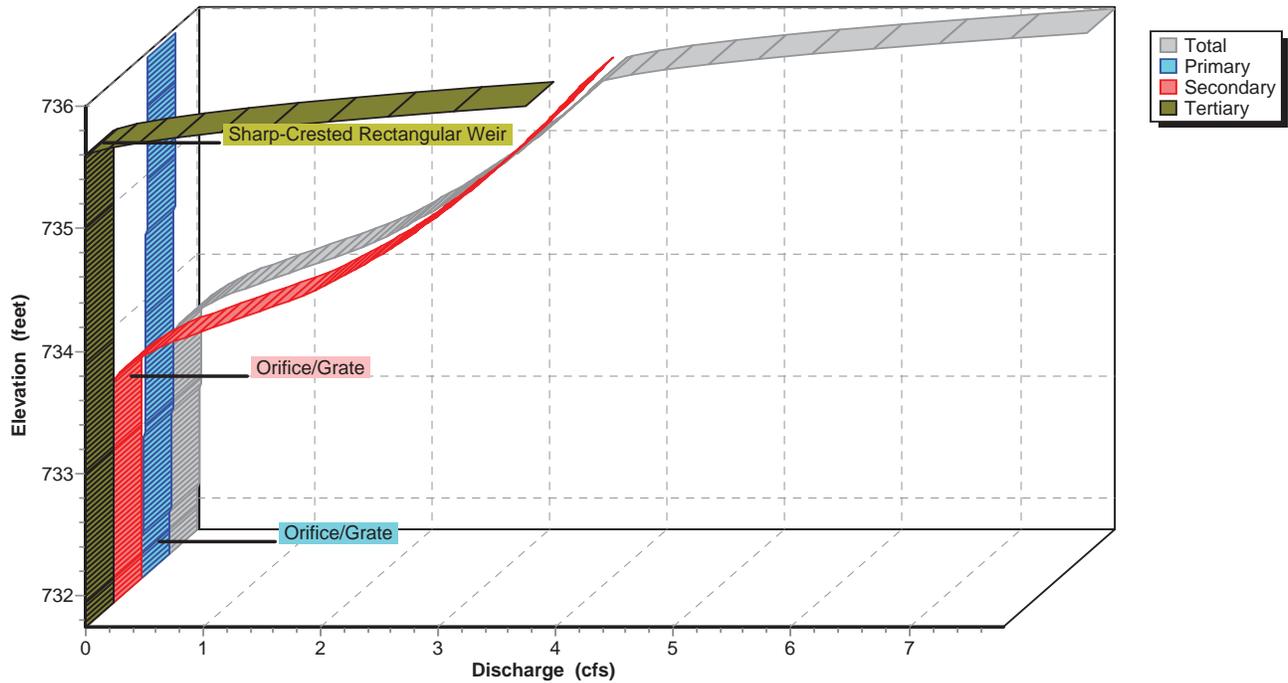
Pond 4P: Pond

Hydrograph



Pond 4P: Pond

Stage-Discharge



Kickmaster Golf WQv

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Type II 24-hr 100Yr. Rainfall=5.63"

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Summary for Subcatchment 1S: PreDeveloped

Runoff = 10.94 cfs @ 12.09 hrs, Volume= 0.754 af, Depth= 3.55"

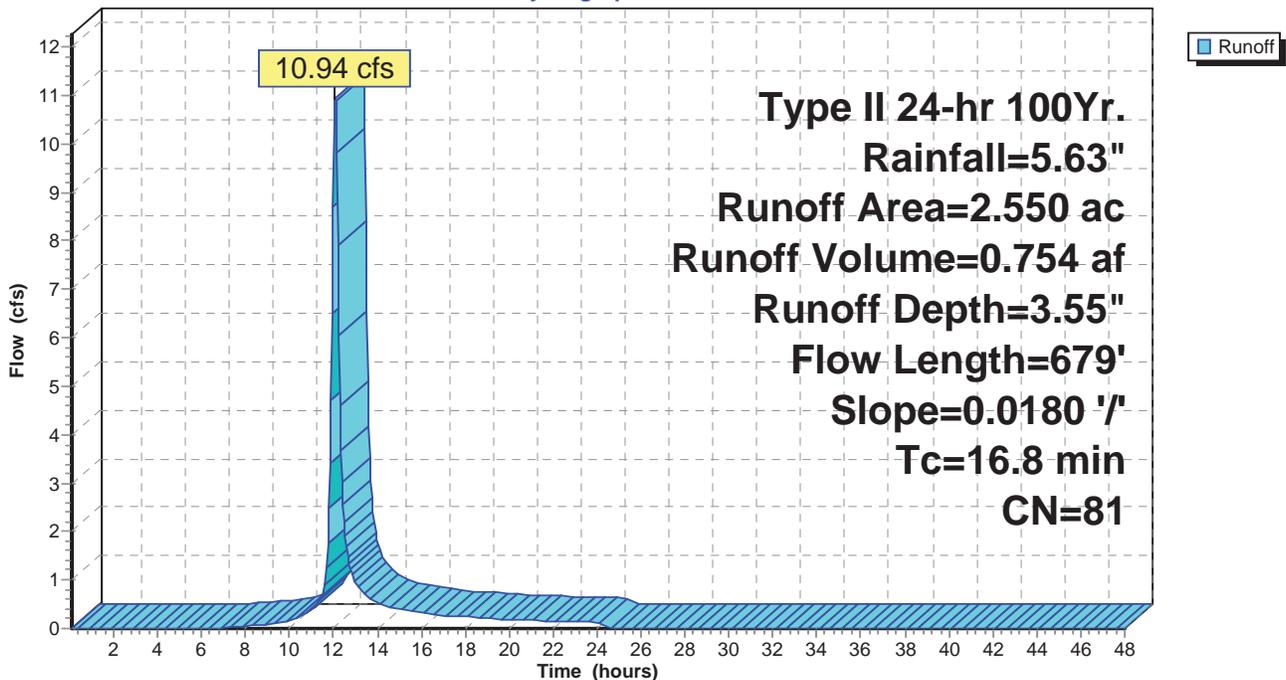
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100Yr. Rainfall=5.63"

Area (ac)	CN	Description
0.330	98	Paved parking, HSG C
2.220	79	50-75% Grass cover, Fair, HSG C
2.550	81	Weighted Average
2.220		87.06% Pervious Area
0.330		12.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	679	0.0180	0.67		Lag/CN Method,

Subcatchment 1S: PreDeveloped

Hydrograph



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Type II 24-hr 100Yr. Rainfall=5.63"

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Summary for Subcatchment 2S: Developed

Runoff = 16.57 cfs @ 11.98 hrs, Volume= 0.862 af, Depth= 4.06"

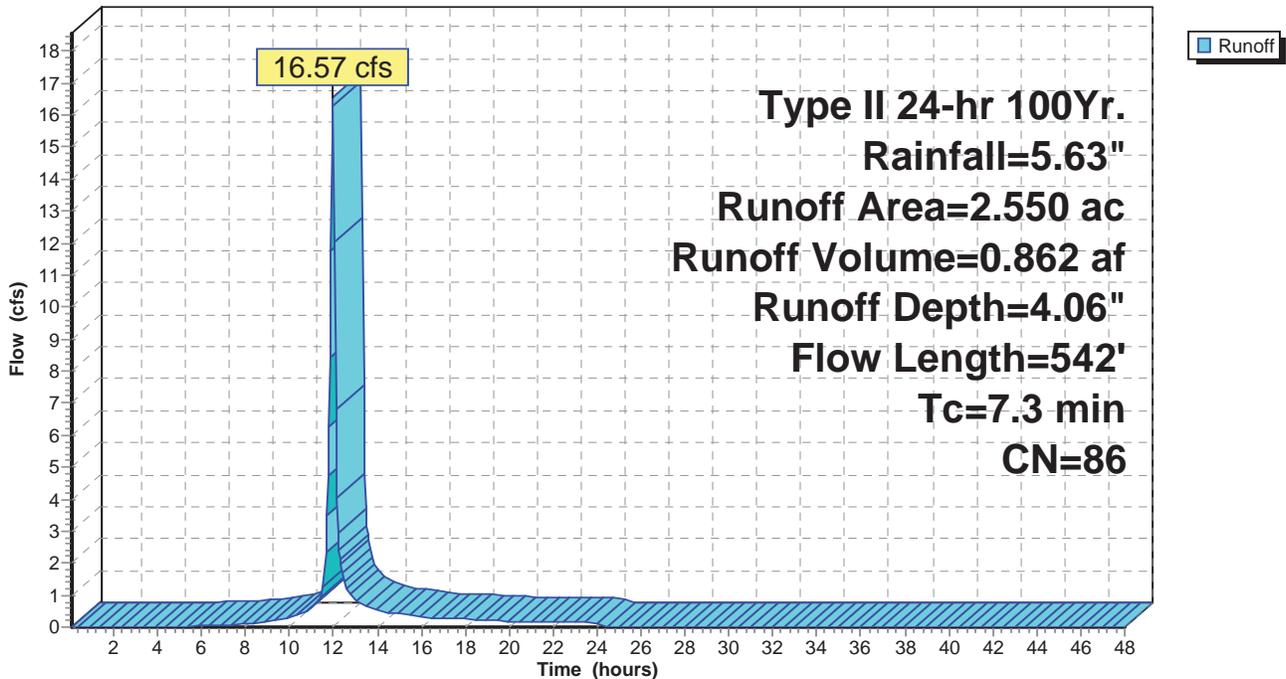
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100Yr. Rainfall=5.63"

Area (ac)	CN	Description
0.920	98	Paved parking, HSG C
1.630	79	50-75% Grass cover, Fair, HSG C
2.550	86	Weighted Average
1.630		63.92% Pervious Area
0.920		36.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	200	0.0140	0.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
3.3	342	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
7.3	542	Total			

Subcatchment 2S: Developed

Hydrograph



Kickmaster Golf WQv

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Type II 24-hr 100Yr. Rainfall=5.63"

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Summary for Pond 4P: Pond

Inflow Area = 2.550 ac, 36.08% Impervious, Inflow Depth = 4.06" for 100Yr. event
 Inflow = 16.57 cfs @ 11.98 hrs, Volume= 0.862 af
 Outflow = 5.76 cfs @ 12.12 hrs, Volume= 0.835 af, Atten= 65%, Lag= 8.3 min
 Primary = 0.05 cfs @ 12.12 hrs, Volume= 0.102 af
 Secondary = 3.87 cfs @ 12.12 hrs, Volume= 0.707 af
 Tertiary = 1.84 cfs @ 12.12 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.10-48.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 735.86' @ 12.12 hrs Surf.Area= 7,667 sf Storage= 15,584 cf

Plug-Flow detention time= 158.8 min calculated for 0.835 af (97% of inflow)
 Center-of-Mass det. time= 139.9 min (938.0 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1	731.75'	16,575 cf	Custom Stage Data (Prismatic) Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
731.75	0	0	0
732.00	1,000	125	125
733.00	2,250	1,625	1,750
734.00	4,000	3,125	4,875
735.00	5,700	4,850	9,725
736.00	8,000	6,850	16,575

Device	Routing	Invert	Outlet Devices
#1	Primary	731.95'	1.0" Vert. Orifice/Grate C= 0.600
#2	Secondary	733.50'	10.3" Vert. Orifice/Grate C= 0.600
#3	Tertiary	735.60'	4.2' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.05 cfs @ 12.12 hrs HW=735.84' (Free Discharge)

↑**1=Orifice/Grate** (Orifice Controls 0.05 cfs @ 9.45 fps)

Secondary OutFlow Max=3.85 cfs @ 12.12 hrs HW=735.84' (Free Discharge)

↑**2=Orifice/Grate** (Orifice Controls 3.85 cfs @ 6.66 fps)

Tertiary OutFlow Max=1.70 cfs @ 12.12 hrs HW=735.84' (Free Discharge)

↑**3=Sharp-Crested Rectangular Weir** (Weir Controls 1.70 cfs @ 1.70 fps)

Kickmaster Golf WQv

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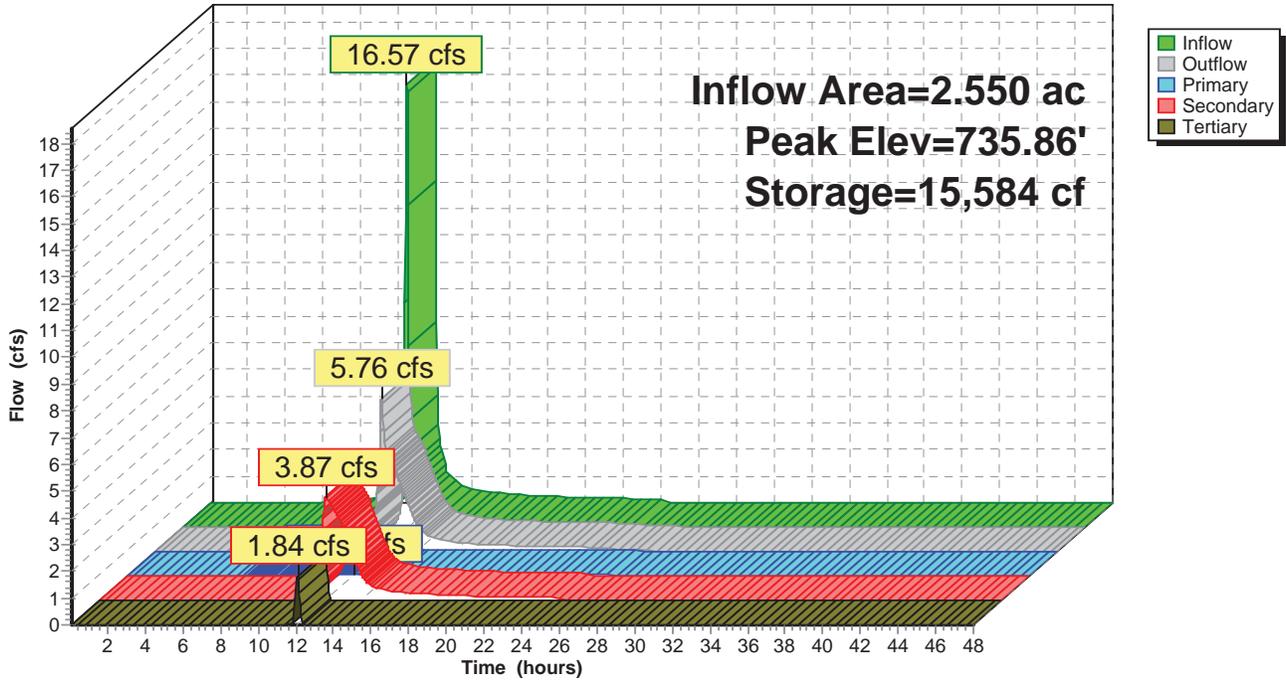
Type II 24-hr 100Yr. Rainfall=5.63"

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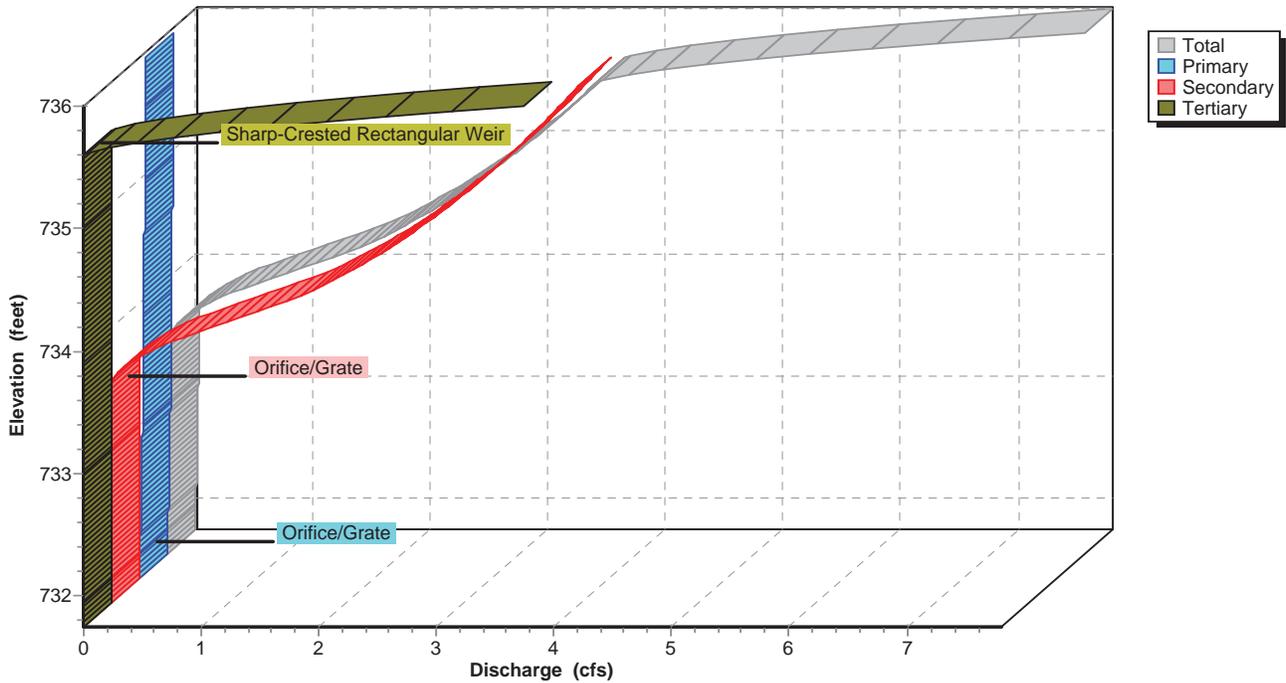
Pond 4P: Pond

Hydrograph



Pond 4P: Pond

Stage-Discharge



APPENDIX B

Tributary Area Maps

APPENDIX C

Water Quality Calculations

WATER QUALITY CALCULATIONS

E. P. FERRIS and ASSOCIATES INC.
 880 King Avenue
 Columbus, Ohio 43212
 614-299-2999
 614-299-2992 (Fax)

Kickmaster Golf
 Franklin County, Ohio

Prepared IMJO
Checked: SWG

Date: 12/10/2014

Project: 1077.01

Water Quality Calculation - Per Ohio EPA requirements

$$WQv = C \times P \times (A/12)$$

C - See Table 1 or calculate using formula

P - precepitation depth (usually 0.75)

A - Area draining to BMP in Acres

Table 1 C Values:

Industrial/Commercial 0.8

High Density residential (>8dw/ac) 0.5

Medium Density res. (4 to 8 dw/ac) 0.4

Low Density res (<4 dw/ac) 0.3

Open Space and Recreation Area 0.2

C: 0.4

P: 0.75 0.75 is OEPA

A: 2.55 Acres

111078 Sq-Ft

Formula:

$$C=0.858i^3 - 0.78i^2 + 0.774i + 0.04$$

WQv: 0.06375 acre-ft

2777 cubic feet REQUIRED for treatment of disturbed area

555 cubic feet of sediment volume

Value for 'i': 0.95

WQv

Total: 3332

C = 0.806978

Kickmaster Golf

Franklin County, Ohio

2.55 Ac.

Water Quality Orifice Calculation

-Volume required for water quality:

6,665 C.F.

-Use 16 hours drawdown time @ 50% WQv:

From $Q = 0.6A (gh^2)^{1/2}$

Where;

$$Q = 3333cf / 57,600s = 0.058 cfs$$

$$h = 735.64 - 732.25 = 3.39 ft.$$

$$g = 32.2 ft/(s)^2$$

$$A = \text{Area in (sq.ft.)}$$

$$A = 0.0061 \text{ sq.ft.}$$

$$D = 0.088 \text{ ft.} = 1.05 \text{ inches}$$

Use 1.0" Diameter Orifice

Kickmaster Golf

Franklin County, Ohio

2.55 Ac.

Water Quality Orifice Calculation

-Volume required for water quality:

4165 C.F.

-Use 48 hours drawdown time:

From $Q = 0.6A (gh^2)^{1/2}$

Where;

$$Q = 4165\text{cf} / 172,800\text{s} = 0.024 \text{ cfs}$$

$$h = 733.00 - 731.75 = 1.25 \text{ ft.}$$

$$g = 32.2 \text{ ft/(s)}^2$$

A = Area in (sq.ft.)

$$A = 0.0045 \text{ sq.ft.}$$

$$D = 0.076 \text{ ft.} = 0.91 \text{ inches}$$

Use 1.0" Diameter Orifice

E. P. FERRIS
AND
ASSOCIATES
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